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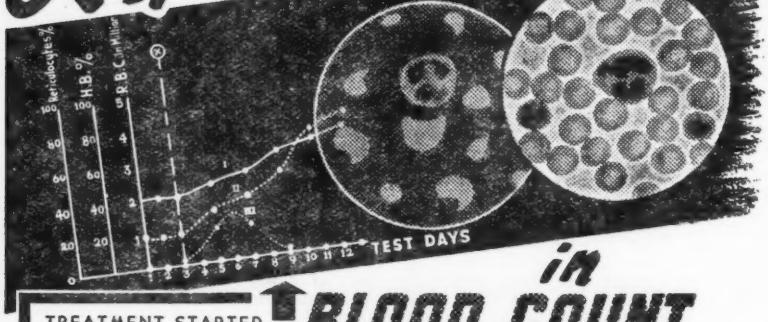

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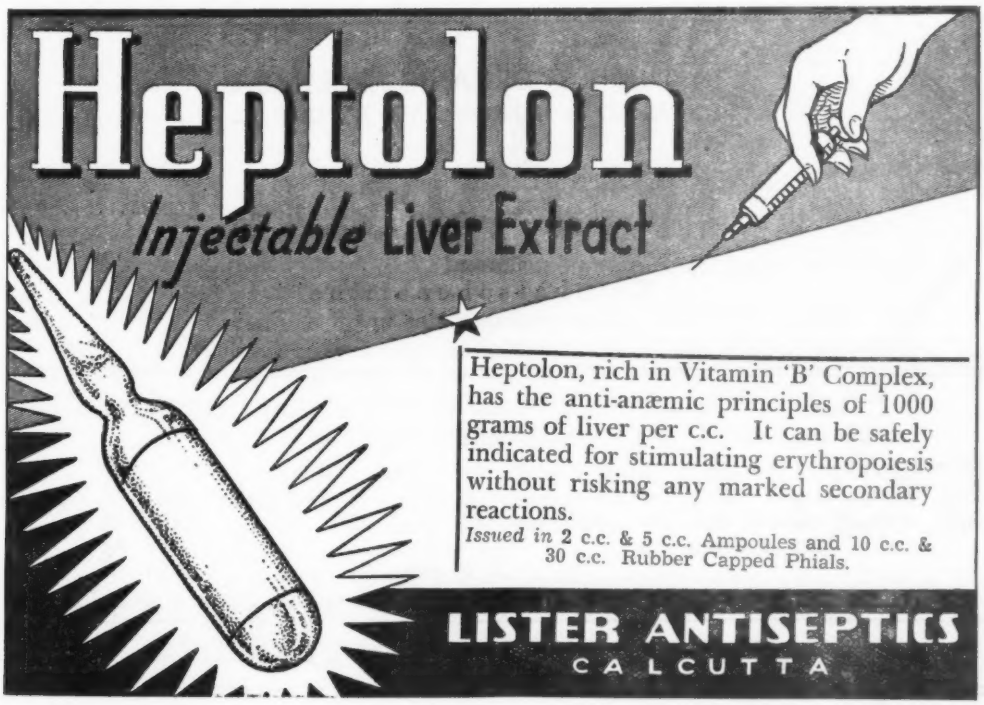
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ABSCESS LUNG

R. MAHADEVAN, M.S. (MADRAS), F.R.C.S. (ENG.), F.R.C.S. (EDIN.),
Assistant, Department of Thoracic Surgery, Assistant Surgeon, King George Hospital, and Tutor in Surgery, Andhra Medical College, Vizagapatam

The material for this subject has been derived from observations made on 21 cases of lung abscess admitted into the King George Hospital.

SEX, AGE AND OCCUPATION INCIDENCE

Sex incidence—Male 17 (81%). Female 4 (19%).

Age incidence—The youngest was a girl of six years and the oldest a man of 53. The others were between 18 and 45. Below is a classification according to age groups:

Years	*Number*
0— 9	1
10—19	2
20—29	5
30—39	9
40—49	3
above 50	1

Occupation—The occupation of these patients seemed to have an ætiological bearing (see under Ætiology). A detailed account of their occupation is consequently shown as under:

Tailor	1
Clerk in a Government office	1
Post-master	1
Motor driver	1
Goldsmith	1
Blacksmith	2
Fitter in an iron safe shop	1
Petty shopkeeper	1
Police constable	1
Household worker	2
Ryot	2
Cooly	3
Student	1
Store-keeper	1
Not stated	1
Nil (the girl of 6 years)	1

ÆTIOLOGY

This is conveniently considered under (*a*) Where a definite cause was obvious. (*b*) Where causation was not definite but there was a more than probable suggestive cause. (*c*) Where no cause could be postulated (the "cryptic" or "idiopathic" group). (*d*) A study of post-mortem records.

(*a*) *Where a definite cause was obvious:* Only two cases fell under this category.

Case 1—The patient was an elderly lady who had an advanced carcinoma of the tongue. Excision was done under intratracheal anæsthesia. She developed pulmonary signs, and skiagram showed a definite lung abscess in the right lower lobe. (Fig. 1). She died 24 days later and post-mortem examination showed multiple lung abscesses in both lungs.

It is interesting to note that this is the only case in the series which followed an operation. This is at variance with the observations of many others. Maxwell (1934) in a complete analysis of 315 cases which came to autopsy found that a high proportion followed abdominal operations. Singer and Graham (1923) state that 32% followed operations of some kind, and Flick *et al* (1929) consider that 70% of the cases were apparently due to some surgical operation, tonsillectomy alone being responsible for 56% of the incidence. This has not been our experience however. In fact, in the E.N.T. Department of our hospital out of about 3,000 tonsillectomies done in the course of 10 years, there was only one case of suspected

lung abscess. (Special communication from Dr. B. Tirumal Rao, E.N.T. Surgeon). Majority of these tonsillectomies were done under general anæsthesia, (this usually being administration of chloroform-ether mixture by open method). It is interesting, however, to recall here the statement of Moore (1922). According to him, "pulmonary abscess occurs about once in 2500 to 3000 tonsillectomies; and since tonsillectomy has become the commonest surgical operation, the actual number of lung abscesses following this operation is greater than from any other single cause."

Case 2—The patient was a police constable aged 24 years. He had a liver abscess which burst into the lower lobe of the right lung, causing a secondary lung abscess. (Fig. 2) While liver abscess is fairly common here, lung abscess arising as a complication thereof has been very uncommon.

(*b*) *Where causation was not definite but there was a more than probable suggestive cause:* Four cases fell under this group.

Case 1—A man of 22 years developed cough, foul smelling sputum, and dyspnœa 15 days after a miraculous escape from a nearly fatal drowning accident. Possibly, he aspirated septic matter during the accident which later produced lung abscess.

In this connection, the following case is of interest. A naval officer in a fit of depression attempted to drown himself by jumping off the boat. He was rescued after a ten minutes' search. Next morning he developed fever with chest pain, and coughed up blood stained sputum. A routine skiagram of the chest showed a remarkable condition. (Figs. 3 and 4). In the absence of the history the skigram would suggest to any one a condition of advanced bilateral pulmonary tuberculosis. With symptomatic treatment and bed-rest, the patient's symptoms rapidly subsided, and a skigram taken four days after admission showed a practically normal lung. (Fig. 4). The patient obviously had lobular atelectasis. However, in view of the symptoms that developed and from the condition of the lung as shown in the skiagram (Fig. 3), one can infer that such cases may go on to pneumonitis and/or lung abscess.

Case 2—A girl of six years, from the age of 3 onwards was frequently troubled with periodical attacks of fever and cough with purulent expectoration. The trouble eventually took on an acute phase when she was brought to hospital. Examination showed a big well established multilocular abscess of the right lower lobe. (Fig. 20).

LEGEND TO FIGURES

FIG. 1.—Lung abscess in the right lower lobe due to aspiration pneumonia after excision of the tongue for malignant growth. FIG. 2.—Liver abscess which had burst into the lower lobe of the right lung. FIG. 3.—Lobular atelectasis resulting from blocking of bronchioles. FIG. 4.—Same case 4 days after. FIG. 5.—Suspected hilar abscess. Condition on 7-10-39 during the course of an attack of fever and cough. Note the abscess cavity with fluid level near hilum. FIG. 6.—Same case on 5-1-40. Note the fanshaped spread of shadow from hilum.

Case 3—A woman of 27 years gave a definite history of periodical attacks of fever and cough since childhood. On examination, she too was found to have an abscess of the right lower lobe. In both case 2 and 3, the underlying cause was probably congenital bronchiectasis. Case 2 died after operation but case 3 did very well. However, no autopsy was permitted in the former and no post-operative lipiodol skiagram was done in the latter. This was unfortunate in that no conclusive proof of the underlying cause could be obtained.

Case 4—In an elderly man, a diabetic aged 53, an abscess of the right upper lobe occurred following an attack of what was thought to be influenzal broncho-pneumonia. This patient eventually did well and his case is further described later.

(*c*) *Where no cause could be postulated:* 15 out of 21 cases fell into this so-called "idiopathic" or "cryptic" type. None of these cases had undergone any previous operation. There was no history suggestive of aspiration of foreign body. There were no obvious septic foci (except possibly in the teeth) to suggest embolic origin. I have heard Mr. Roberts (Surgeon, Brompton Hospital) suggest that the so-called idiopathic type of abscess lung is possibly due to aspiration of sordes from septic teeth during snoring. How far such a possibility could have accounted for development of abscesses in these 15 cases, it is difficult to say because almost all of them had septic teeth. The same surgeon had a patient under his care with a broncho-pleural fistula. Food particles, occasionally used to escape through the fistula without the patient being in any way aware of it and without its having excited any cough (though laryngeal sensation was apparently normal). It has been suggested that the cough reflex in these cases is in some way altered or the laryngeal sensation deficient, whereby food particles go the wrong way unobstrusively. These may obviously set up inflammatory changes in the lung.

A consideration of the occupation of these cases shows that in a majority, long hours of work in a dust-laden, moist, ill-ventilated atmosphere is a common

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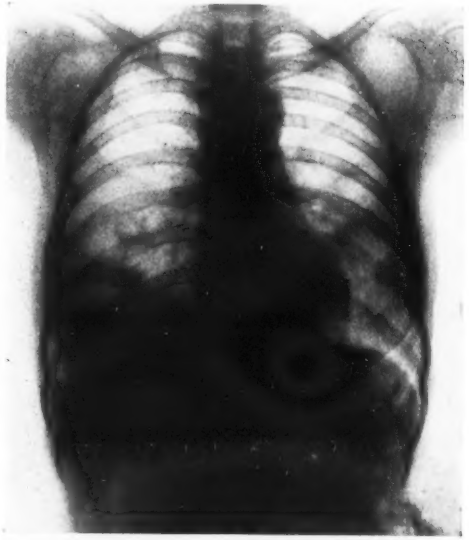
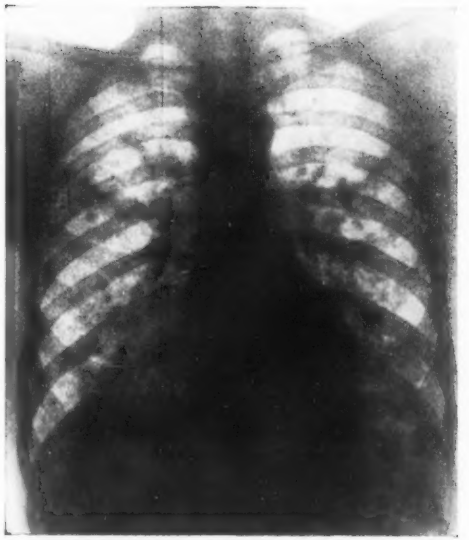


FIG 1.

FIG. 2.



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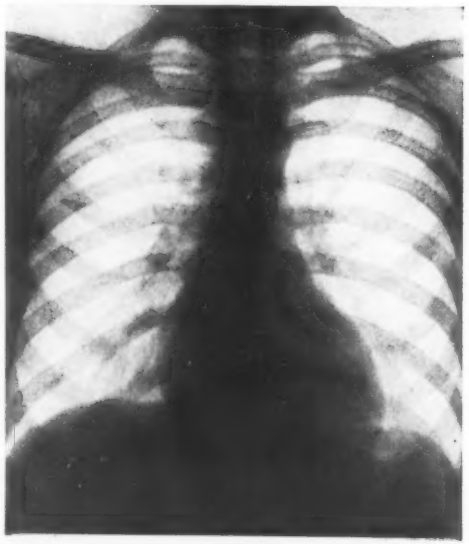

FIG. 4.

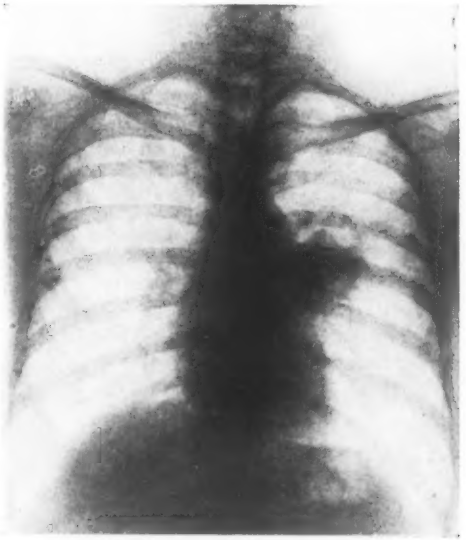

FIG. 5.

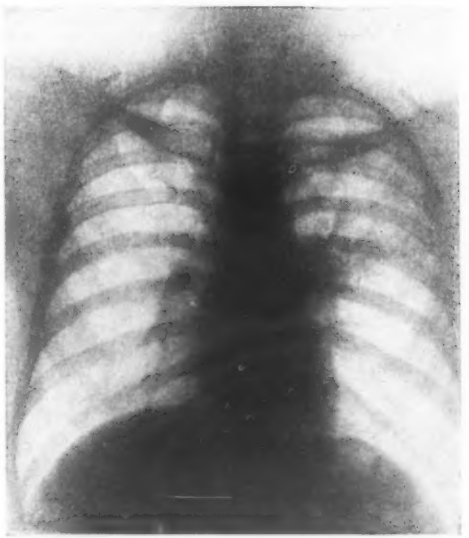

FIG. 6.

MAHADEVAN—*Abscess Lung.*

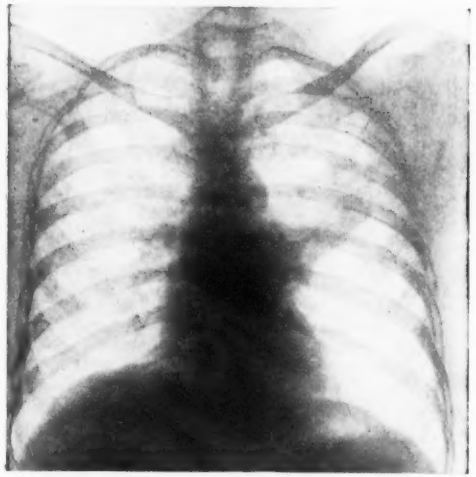

FIG. 7.

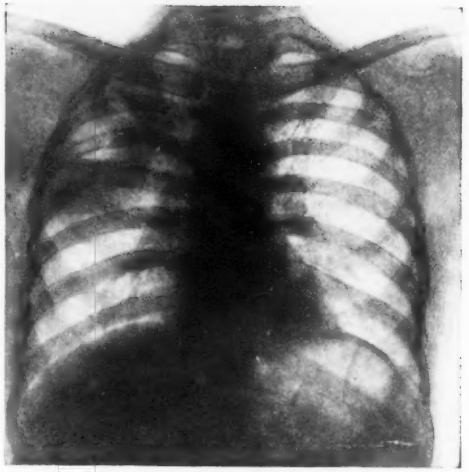

FIG. 8.

FIG. 9.

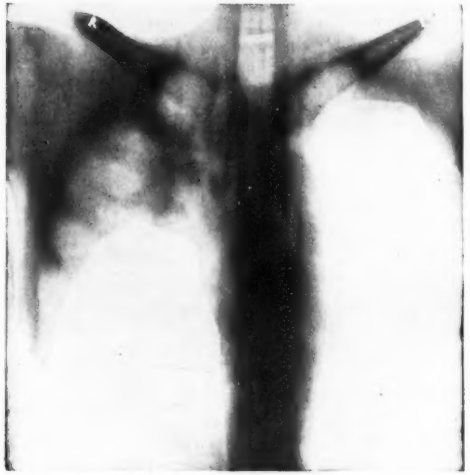

FIG. 10.

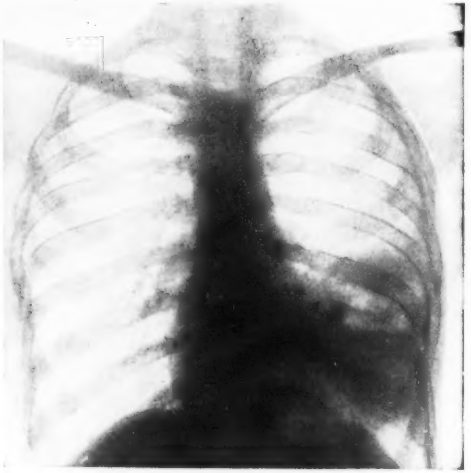

FIG. 11.

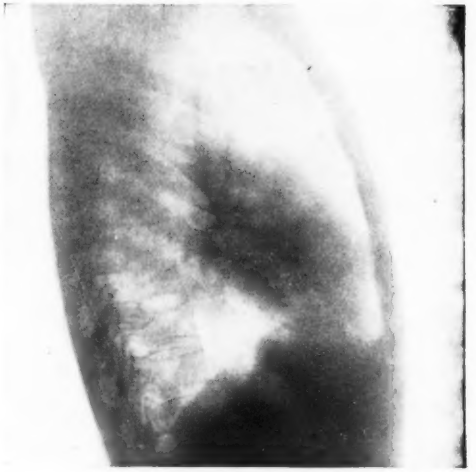

FIG. 12.

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feature. This in itself may be a more than contributory cause. For example, a blacksmith working in a local harbour-workshop definitely stated that he took to his job seven years previously, and that his work was in a dusty atmosphere near a furnace. Soon after taking the job he began having attacks of troublesome cough with fever, now and again. During the last attack he became acutely ill, and at the time of admission was found to be suffering from a lung abscess. In fact he developed gangrene of the lung—the only case of gangrene lung in the series. At operation a big portion of the lung came off as a slough. He was progressing satisfactorily for 3 days when unfortunately he developed gangrene of the other lung also and died soon after.

Abscesses secondary to new growths or to suppuration of the adjacent organs (except for the one case already mentioned) were conspicuously absent. No case followed frank pneumococcal pneumonia; in the only case where this possibility was suspected, further examination revealed the condition to be one of interlobar empyema.

(*d*) *A study of the post-morten records* of the hospital regarding lung abscess reveals some interesting features. Out of 1162 post-mortem examinations during the past 15 years and 9 months, there were 26 definite cases of non-tuberculous abscesses of the lung. Only one of these was a woman of 30, all the other 25 were males. They were in the majority between the ages of 30 and 40, exception being 24 years (2 cases), one case each at age of 45, 50, 56 and 60.

The conditions for which these patients had come to hospital were variable. Only 5 of these had come in for primary lung trouble, 4 of these diagnosed as lung abscess, and the fifth had passed off as tuberculosis. In the others, lung abscess was a complication of or superimposed on other troubles and was the ultimate cause of death in them.

Only 8 of the cases had undergone operation of some sort or other as shown below:—

(1) Gastrostomy in one case, for carcinoma of the cardiac end of the stomach. (2) Gastrotomy for removal of a foreign body. (3) Gastro-jejunostomy in 2 cases, both for pyloric stenosis; in one case due to a cicatrising duodenal ulcer, and in the other due to carcinoma of the pyloric end of the stomach. (4) Radium implantation in two cases for oral carcinoma. (5) Lung abscess itself—two cases.

LEGEND TO FIGURES

FIG. 7.—Same case as in FIG. 6 on 17-7-40. Sputum now contained tubercle bacilli. FIG. 8.—Lung abscess in the right upper lobe. FIG. 9.—Same case lateral view. FIG. 10.—Same case Tomogram. The tomogram was clearest at the plane of midaxillary line, and this finding is an important helpful factor in locating the abscess. It may be pointed out here that the multilocular nature of the abscess is well brought out in the tomogram though the plain antero-posterior (FIG. 8) and lateral (FIG. 9) views show it to be apparently unilocular. FIG. 11.—Abscess left lung in the lower part of the upper lobe. FIG. 12.—Same case (on 27-9-40) lateral view.

The other 18 cases were suffering from various troubles as myocarditis and deficiency œdema, stricture œsophagus and pharyngeal pouch, gangrenous condition of toes and foot, ulcerative colitis (6 cases), Pott's disease, ankylostomiasis, stricture rectum etc. These patients were apparently very ill and the lung complication was in the nature of a terminal event.

But it is of significance to note that 6 of these had definite ulcerative colitis (2 of them proved to be amœbic and the other 4 probably a combination of both amœbic and bacillary dysentery).

Bacteriology—Culture (both ærobic and anærobic) failed to show any constant feature suggestive of cause and effect. Staphylococcus and streptococcus (viridans and hæmolyticus) and Neisser pharyngis were most frequently isolated. Pneumococcus and diphtheroid organisms were found in one case along with anærobic streptococcus.

Blood Wassermann reaction—This was ++ in 3 cases, negative in 8 cases, and doubtful in 1.

Unfortunately, there is no note as to the reaction in the other cases.

	Right Lung	Left Lung	Total
Upper lobe ..	5	1	6
Lower lobe ..	6	5	11
Middle & lower lobes ..	1	—	1
Upper & middle lobe ..	1	—	1
Upper & lower lobe ..	0	1	1
	13	7	

In one case, there were multiple abscesses in both lungs.

Signs and Symptoms

Onset of the disease—The onset of the trouble in many of these cases has been more or less on the following lines. An attack of fever with or without rigor was followed by cough, at first non-productive soon becoming productive of foul smelling and purulent expectoration. The coughing up of sputum was always associated with temporary amelioration of symptoms. One case reported to hospital on the 27th day of his illness with fever and cough but had no expectoration. The first time he expectorated pus was a few days later while in hospital.

The following table shows an analysis of the various symptoms at onset:—

Fever with rigor	5 cases
Fever with pain in the chest	9 cases
Cough was definitely the first symptom and fever came on a week later	1 case
Pain in the fourth intercostal space, sometimes in front, sometimes behind, followed by fever and rigor a a week later	1 case
Foul breath with fever (followed two or three days later by coughing up of foul sputum)	2 cases
Fever with cough	1 case
Fever only	2 cases

Course of the illness—While the coughing up of purulent matter gave relief, it was never sufficient to produce a cure. This partial relief was unfortunate, because it encouraged the patients to persevere with palliative measures in the hope that ultimate cure will result. Many of them had several months of disability at home, with periodical attacks of cough, fever, breathlessness and loss of weight and majority of them were unable to carry on their avocation. By the time they resorted to hospital they were very ill, emaciated, dyspnœic and cyanosed. A boy of 18 was actually orthopnœic at the time of admission. Clubbing of the fingers was always present in all the cases where it had been specifically looked for. Two cases had albuminuria at the time of admission which disappeared with treatment. Five of the patients had frank attacks of hæmoptysis prior to admission.

One patient suffered for nearly 8 months before he sought treatment; the earliest case reported at the end of 27 days while the average period of disability before resorting to hospital treatment was 3½ months. In the particular case who reported as early as 27 days there was no clubbing of the fingers.

Character of the sputum—This was always foul, yellowish, and often contained thick pus. Sometimes it was thin and purulent. In the only case of gangrene of the lung already mentioned, the sputum was exceedingly foul, almost fœtid. In all these cases the quantity expectorated was large. Unfortunately, the exact quantity had not been noted in the early cases. The largest quantity recorded in 24 hours was 23 ounces, and the smallest 2. In one case the quantity was as much as 10 to 14 oz. and yet the size of the abscess cavity and inflammatory area around was very small. The sputum when allowed to stand separated into the well-known three layers. In many cases the sputum was blood-stained, sometime or other.

Physical signs—Diminished respiratory excursions of the affected side were often evident. Dullness of the involved area with rales and rhonchi all around was found in some. In some, where the pus had been coughed up, and a large air containing cavity present, resonance on percussion, bronchial breathing and fine crepitations around were noted. In fact, varying combinations were found in different cases and in the same case at different times depending on the situation and the size of the abscess, whether it was filled with pus, or partially or completely empty etc. While the area of involvement was known broadly, *accurate localisation sufficient to determine the area of operative approach was never possible without the help of x-rays.* In some cases, the presence of small abscesses was revealed only by x-rays and in others the size of the abscess as shown by the x-rays was far bigger than what was ever suspected by physical signs alone.

Diagnosis

This falls under two headings, (1) of the abscess and (2) of its location.

In the state in which the majority of these patients came with a history of months of cough and expectoration and loss of weight, a tentative diagnosis of pulmonary tuberculosis was naturally made. While a lung abscess might have been suspected in a particular case it was impossible to exclude the possibility of tuberculosis and hence many of these patients first found their way to the tuberculosis wards. In fact 14 out of the 21 cases were transferred from the tuberculosis wards. The failure to find tubercle bacilli even after repeated examinations, and the x-ray findings

proved the conditions to be lung abscess. The other 7 cases had found their way to the medical wards as pneumonias or broncho-pneumonias and the diagnosis of lung abscess was made there. Suggestive points in the history of early cases are, foul breath even without foul sputum, and the sudden outpouring of pus from the lungs.

In excluding tuberculosis, repeated examinations for tubercle bacilli, if necessary by concentration method and by culture are essential. The following case is of interest in two ways. It shows (1) the extreme care necessary before labelling a case as hilar abscess. (2) the possibility of an apparent hilar abscess being really tuberculous in origin. The case was that of a retired officer aged 54, a diabetic who got an attack of fever and cough and at the end of a week began coughing up large quantities of pus. The fever subsided and the general condition improved considerably with postural treatment and administration of M. & B. tablets. However, the cough persisted. Skiagrams showed an abscess cavity near the hilum with a definite fluid level. Repeated examination of sputum for tubercle bacilli proved negative. But in view of the diabetes and the chronic cough the possibility of tuberculosis was constantly borne in mind. One day, four months after the onset of the trouble, sputum showed tubercle bacilli in large numbers. The patient was sent over to a sanatorium for further treatment. It is impossible, of course, that this patient had a dormant tuberculous focus and the development of a hilar abscess reactivated the tuberculous focus, and that it burst into the abscess, thereby accounting for finding the tubercle bacilli in large numbers suddenly. However, all the 21 cases in the series were all peripheral abscesses and the fact that what appeared to be a hilar abscess should in the end turn out to be tuberculous seems to be of important significance. (Figs. 5 to 7).

The other factors that help to diagnose a lung abscess are the foul nature of the sputum, its characteristic separation into three layers and the *presence of elastic fibres evidencing destruction of lung tissue.* This last point helps to distinguish a lung abscess from an empyema that has burst into a bronchus. In the latter there will be no elastic tissue.

Blood count is of some help. Leucocytosis of 20 to 30,000 was frequently noted, with a definite polymorphonuclear increase. There was often a marked secondary anæmia, sometimes as low as 3 million R.B.C., and 55% hæmoglobin. One case had only 40% hæmoglobin.

One little point that seems to be of some importance in diagnosis is the presence of clubbing of fingers. This was very commonly present in lung abscess cases and not in tuberculous patients.

Pain in the chest was complained of in 12 of these cases at the time of onset or later, but it was of the nature of a dull ache and diffuse and was not of help in diagnosing lung abscess, much less, in localising it. Where there was definite localised pain in the chest wall, it just pointed to an area of associated pleurisy. Where the pain was diffuse and vague respiratory excursions did not aggravate it.

The value of x-rays—If there is one single factor that is of supreme importance in diagnosis, it is the x-ray. Its value is all the more great because, it helps to localise the abscess with a degree of certainty and ease that is not obtainable by other methods.

In a few cases in the series, skiagrams taken at periodical intervals clearly demonstrated the various stages in the formation of a lung abscess. In the early stages of pneumonitis there was a diffuse shadow in the lung area. Later this became more localised dense and definite, but without a fluid level. Still later when a communication had been established with the bronchial tree and pus had been coughed up, skiagram showed a shadow with a definite fluid level.

Localisation of the abscess is important not only for surgical approach, but also for postural treatment. For proper localisation it is essential that the x-ray pictures are taken in the erect posture both in the anteroposterior and lateral views. In some cases the skiagrams taken with patients lying on a side are of help. Tomography has been of immense help in localisation.

Bronchoscopy has not been used for diagnostic purposes as a routine, mainly because there was no suggestive history of foreign body in any of these cases, and also because in the stage in which they came other factors rendered diagnosis beyond doubt. It was, however, done in cases where post-operative course was not smooth and the condition became chronic. In one such case a narrowing of the main connecting bronchus was found. However, as it is well recognised that a foreign body or a pathological condition may be found where least expected, we hope to make a more routine use of bronchoscopy.

Lipiodol skiagram was also used in later cases where healing was not as prompt as expected. In the case already mentioned some bronchiectatic cavities were found.

Treatment

Medical—Among the various medical measures available, postural treatment must get the pride of place. It is often taken for granted that postural treatment is synonymous with sporadic tilting up of the foot end of the patient's cot, patient lying prone or semi-prone. This may be of help in some cases, but in several others such a method is valueless. The posture differs very much according to the lung and the lobe affected and whether the abscess is in the middle, anterior or posterior portions of the lung. Depending on these factors, particular postures have to be adopted. This has been worked out by Nelson whose conclusions are quoted:

(1) The drainage should be towards the bifurcation of the trachea.

(2) In the localisation of pulmonary lesions the lateral x-ray film is as important as the anteroposterior one.

(3) When lesions are considered according to their position in the anteroposterior film, those in the upper zone are treated in the sitting position, those in the middle zone by lying flat, and those in the lower zone with the foot of the bed raised.

(4) When lesions are considered according to their position in the lateral film, those occurring anterior to the tracheal axis are treated in the supine position, those on the tracheal axis in the lateral position, and those posterior to it in the the prone position. (Nelson, 1934).

One important helpful feature to decide the posture is the cough; whichever position produces the most productive cough that is the best posture. It is very necessary that the patient is informed of this, because owing to the fear of getting a troublesome fit of cough he instinctively avoids the very posture required.

LEGEND TO FIGURES

FIG. 13.—Same case as in FIG. 12 on 16-11-40, *i.e.*, 7 weeks after, showing results of postural treatment. FIG. 14.—Same case with lipiodol. Note that no lipiodol enters the old abscess area. FIG. 14.—Same as FIG. 14 lateral view. FIG. 11—15. Skiagrams of a case of abscess lung at various stages. Patient refused operation. Is now in fair health, but for occasional asthmatic attacks. Lipiodol skiagram taken about 4 months after the condition shown in FIG. 11. Note that no lipiodol enters the old abscess area. Probably the mouth of the related bronchus is blocked by granulation tissue or narrowed by ulceration and fibrosis. FIG. 16.—Lung abscess in the left lower lobe. FIG. 17A.—Same case with lipiodol. FIG. 17B.—Same case lateral view depicting obvious and marked development of bronchiectasis. FIGS. 16, 17A and 17B show clearly marked development of bronchiectasis in a patient with lung abscess who refused operative treatment and had M. & B. 693 tablets (and postural treatment at home). He also developed metastatic abscess.

However, patients soon learn that such a posture is followed by great relief and willingly stick to it for long hours or even days at a stretch and soon get accustomed to it.

Among other medical measures of significance may be mentioned administration of M. & B. 693, or Prontosil group of drugs where indicated. Arsenical group of drugs was not used except in cases where syphilis was definitely associated.

Result of medical treatment—This has been very unsatisfactory when adopted as the sole measure of treatment. As a pre-operative measure it has been of definite help.

The following four cases who underwent only medical treatment showed results as under:—

Case 1—This patient aged 32 had an abscess in the anterior part of the left lower lobe. He was suffering from attacks of asthma off and on for the past eight years. His blood Wassermann was strongly positive. Postural treatment was instituted and he was put on M. &. B. tablets two t.d.s. Appropriate antisyphilitic measures were also adopted. He got very much better and was symptom-free in five weeks when he went home. He reported six weeks later in fair health but had gone through an attack of cough and fever for a few days in the interim. On 27-1-1941 (that is 9 weeks after discharge from hospital) a lipiodol skiagram was taken. (Figs. 11-15).

There is evidence to show that the lung has not come back to normal state. The lipiodol does not enter the bronchus corresponding to the original area of abscess. Possibly some granulation tissue is still blocking the bronchus or bronchial stenosis has occurred. His present state of health 9 months later is still none too satisfactory. On enquiry he still has attacks of asthma and is feeling weak and losing weight.

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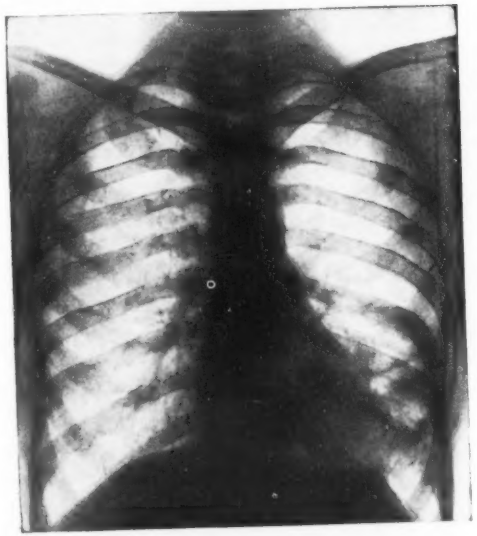


FIG. 13.

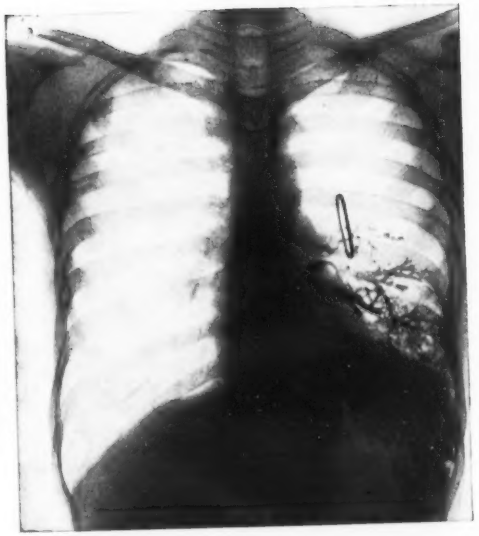


FIG. 14.

FIG. 15.

FIG. 16.

FIG. 17A.

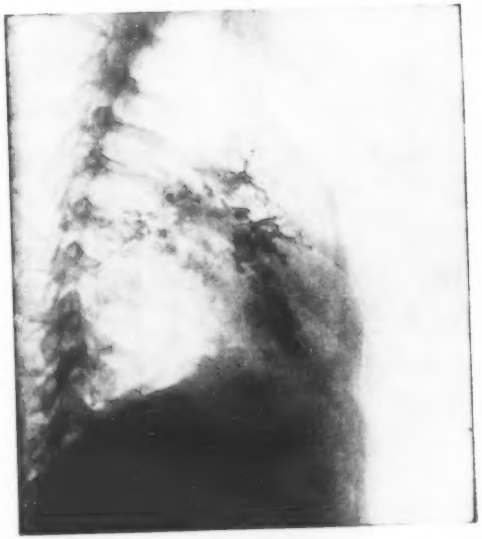


FIG. 17B.

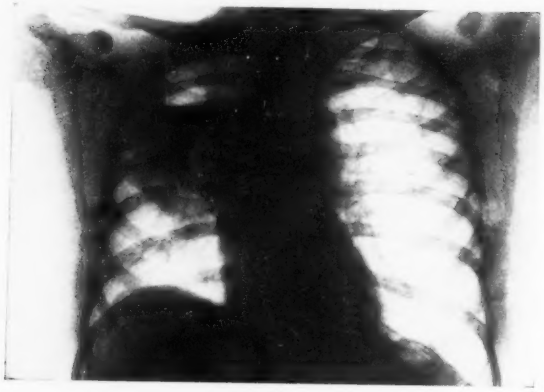


FIG. 18.

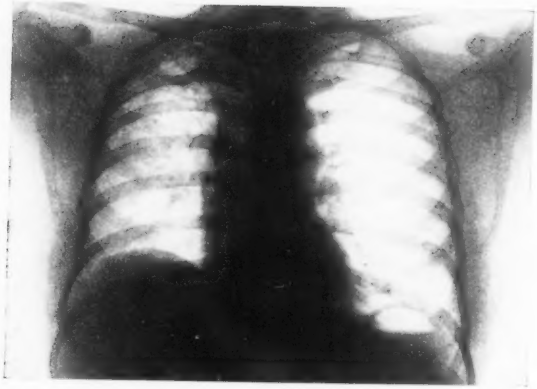


FIG. 19.

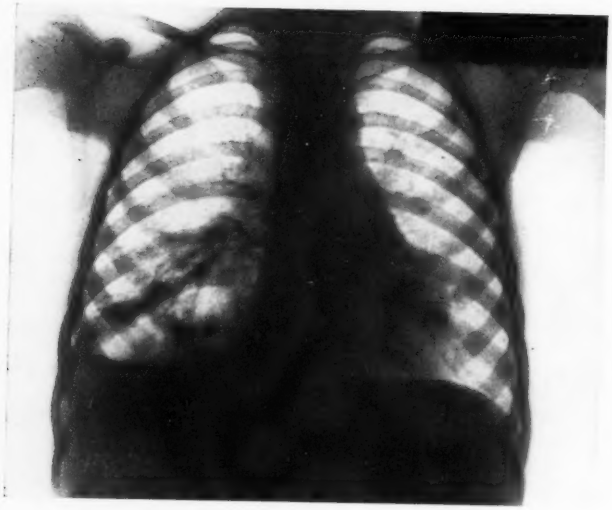
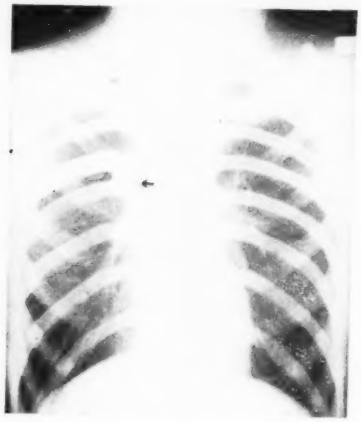


FIG. 20.

FIG. 21.

MAHADEVAN—*Abscess Lung.*

Hemivertebra with missing ribs.



Bony union of ribs.

Supracondyloid process of the humerus.

AGGARWAL—*Some Congenital Anomalies.*

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Case 2—Male aged 30 years, had 8 months history of previous attacks of fever and cough with foul sputum. On admission, he was found to have abscess of the left lower lobe. Operative treatment was refused, and the patient discharged himself. He was advised to take M. & B. tablets and also was told the posture he should adopt. There was temporary improvement. On 24-1-41, (10 weeks after discharge) when he reported himself in response to an inquiry he was found in good health. He said he had marked relief very soon after taking M. & B. tablets for three days, six daily. He had no more treatment worth mentioning, and was able to carry on his work as a tailor.

However, three months later he came back in a much worse condition; had fever and cough with expectoration and had a very big inflammatory mass in the right iliac fossa causing a flexed hip. Lipiodol skiagram taken on 29-4-41 shows definite bronchiectasis in the left lower lobe. (Figs. 16 and 17). So in this case, the patient has been developing metastatic infection and has actually developed bronchiectasis also.

Case 3—A boy of 18 developed an abscess of the right upper lobe. With the institution of medical treatment he got rapidly better in course of 25 days and went home. However, the whole trouble restarted after six weeks, and he readmitted himself 11 days after the recurrence of the trouble. At operation he was found to have a big multilocular abscess cavity occupying a considerable portion of the right upper lobe, and thin cream coloured stinking pus escaped. He died three days later of gas gangrene of the chest wall and septicæmia. No post-mortem could be obtained.

Case 4—This case was particularly gratifying, considering that a dramatic cure was obtained in a diabetic aged 53 who developed an abscess of the right upper lobe after an attack of influenzal broncho-pneumonia. He was put on posture, M. & B. tablets and insulin injections. He completely recovered and was known to be very well two years later doing his work as a clerk in a Government office. This case is particularly interesting especially in view of the bad prognosis in diabetics. (Chevalier Jackson and others, 1940). Further enquiry shows that he is now alive and well. (Figs. 18 and 19).

LEGEND TO FIGURES

FIG. 18.—A lung abscess in the right upper lobe. FIG. 19.—Same case after postural treatment. FIG. 20.—Big lung abscess in the right lower lobe in a girl of 6 years. FIG. 21.—Big abscess of the right lung, lateral view (7-5-40). Note the multiple levels.

The bad results of medical treatment noted above are partly because the patients in whom this was adopted had passed the stage when it was likely to be of benefit and secondly because they discharged themselves home quickly where they adopted postural treatment etc. possibly half-heartedly, wrongly, or not at all.

The best place for medical treatment is perhaps (1) in the early cases under institutional care and (2) as a measure of preoperative preparation.

Operative treatment—Majority of the patients had a trial with postural treatment in the medical wards before surgery was decided upon. The dangers and uselessness of artificial pneumothorax and phrenic paralysis are too well known. These were never adopted. In the only case in the series where artificial pneumothorax had been done elsewhere empyema developed. No case in the series was early in any sense. Majority of them by the time they came into hospital, were gravely ill and very poor surgical risks. This is unfortunate, as operative treatment holds out good results in cases that have not gone too far from toxæmia and anæmia.

Bad results of operative treatment are mainly due to the fact that operations have been undertaken at a late stage when there are already chronic changes in the lung.

Newhoff (1936) has published a list of 37 consecutive cases of lung abscess, 36 of whom were completely cured by early operation. There was only one operative death. Roberts following this, operated on 9 early cases (*i.e.*, within 6 weeks) and all of them got completely cured.

If under conservative treatment the patient's temperature is coming down, pulse rate gets lower, the sputum is diminishing in quantity, and what is more important, x-ray shows evidences of resolution and pictures taken in the sitting posture show a diminishing fluid level, one is justified in continuing conservative treatment. If not, the earlier operation is resorted to, the better. If during conservative treatment a setback occurs, even if it is the first setback it is better to operate. On this principle Newhoff operated in some cases as early as on the 8th day if conditions did not improve definitely. Any operation done within a month can be considered early. As to

after what period a case should be called chronic, no definite answer can be given. An arbitrary period of 6 or by some even 8 weeks is adopted but there is no unanimity of opinion on this point.

In the early cases of our series operation was undertaken in two stages: the 1st, designed to produce adhesions between the area of lung involved and the adjacent layers of pleura, and the second, about a week later when the abscess was opened through the adherent area. The aim here is to obviate the dangers of infecting the pleural space, a serious catastrophe should it occur if the abscess is opened in the first stage itself and the pleural space not obliterated. However, in some cases, the pleura was found adherent at the intended first stage operation and naturally the abscess was then alone opened into, thus completing the operation at a single sitting. Where adhesion was intended to be produced, an iodine pack was placed between the chest wall and parietal pleura and the wound sutured over. This was opened up about a week later, the pack removed and the second stage of the operation proceeded with. The "plombe" technique where paraffin pack is used was never adopted by us. Profiting by the experience of others, later in our series we have operated on these cases at a single sitting with rather encouraging results. (Figs. 21 and 22). The basis for this procedure is the fact that a very great majority of lung abscesses are peripherally situated and that it is always possible to find an area of adhesion between the parietal pleura and the inflamed lung even in the early stages. Success depends on accurately localising this area which may be comparatively small but is nevertheless there and is nearest to the abscess cavity in point of depth from the parietes. It was the non-recognition of this and incising through a great depth of comparatively uninvolved lung that was the cause of such trouble as air embolism or uncontrollable bleeding during operations, or of infective complications later. It is of imperative necessity for success by this method, that localisation should be accurate. The value of carefully taken x-rays (A.P. and lateral views in the erect posture, and tomograms) has already been stressed.

At operation if the expected area is adherent, the overlying pleura is thick, dull and in some cases even œdematous. The underlying lung does not move with respiratory excursions. In one case where the adhesion was a circle only an inch in diameter, the surrounding lung was found expanding while the adherent area was puckered and indrawn with inspiratory movement. Incision through this area led into the abscess cavity.

FIG. 22.—A case of big abscess of the right lung which on x-ray (lateral view) showed multiple fluid levels (*vide* FIG. 21) operated at a single sitting. Photo shows condition of the patient on 10-8-40. He is quite well and back at his work as a motor-driver.

Technique of one stage operation—All our operations were done under regional infiltration with ½% novocaine. For basal narcosis an injection of 1|6 to 1|4 grain morphia with 1|100 grain atropine was given (or alternatively 3 grains of sodium amytal by mouth) 1|2 to 3|4 hour before operation. The patients were kept in a semi-sitting posture with the affected area uppermost. The overlying ribs were resected and the intercostal neuromuscular bundle removed. After a confirmatory needling a free incision was made through the adherent lung. The overlying lid of lung tissue was always freely removed. The quantity of pus that escaped was often much larger than the size of the

abscess would suggest. In some cases there was no pus, it having been previously coughed up, but the cavity and the necrotic tissue around proved the presence of an abscess. In a majority of the cases the abscess was multilocular, even in cases where plain x-ray showed it to be apparently unilocular. There were always one or more communications with the bronchial tree. After removing sloughs that were loose, the cavity was always packed with gauze and the parietal wound left wide open and unsutured. It is to be emphasised that the wound should be left unsutured. If not, anærobic organisms take a hold on the wound. Even loose suturing around a big drain, is unsatisfactory.

Post-operative treatment—The superficial dressings were changed as often as necessary. The plug was renewed at the end of a week and thereafter was gradually shortened. The rest of the treatment was purely symptomatic. Linctus heroin or morphia was used to lessen discomfort due to cough, but not sufficient to abolish cough reflex. The expectoration was large during the first day or two after operation and thereafter, rapidly lessened and the patient soon got comfortable.

Post-operative complications— 1. Spontaneous pneumothorax: Two cases developed this condition. Of these one was a case early in the series where a few sutures had been put in the parietes. In spite of the fact that the sutures were loose, air got forced into the tissue planes during cough, and there was obvious subcutaneous emphysema in addition to spontaneous pneumothorax. Fortunately, no infection occurred in any of these cases.

2. Empyema: In our early series one case developed empyema after the first stage operation, but with drainage even this case did well.

In this connection it may be pointed out that empyema developed at some stage or other in three of the cases. One definitely followed attempts elsewhere to collapse the lung by pneumothorax, one case followed the first stage operation (which has been mentioned above) while the third patient came with lung abscess and empyema and it looked probable that the lung abscess was the primary cause.

3. Shock: This was very marked in two cases and was directly responsible for death.

4. Aspiration pneumonia of the healthy lung: one case developed this complication.

5. Reactionary hæmorrhage: Fortunately no case developed this complication.

6. Secondary hæmorrhage: This accounted for death in one case.

7. Anærobic infection of the chest wall and septicæmia was the cause of fatality in one case.

Results

The case where multiple bilateral pulmonary abscesses followed excision of tongue is not included in assessing the result, for the patient was so ill and both lungs so extensively affected that operative treatment was out of the question. The one case where artificial pneumothorax was done elsewhere and the patient developed empyema is also excluded for he was very ill at the time of admission and all that was done was drainage of the empyema. The patient went downhill and was taken home moribund.

Of the remaining 19 cases the results of treatment were as follows:

Medical treatment: 4 cases had medical treatment only. They were fairly early cases but the response to medical treatment was not considered satisfactory in three of them and operation was advised. This was refused. The one case that respondeed to medical treatment was the diabetic already mentioned, and he is now known to be alive and quite healthy 3 years and 6 months after the original trouble (Figs. 18 and 19). Of the other three, one showed some improvement but has still frequent attacks of cough and asthma and is also losing weight. The second got definitely worse, has developed bronchiectasis and metastatic abscess but still refuses operation. The third got worse and had to be operated on eventually.

Considering that these four cases were about the best early type of cases we had in this series, one is forced to the conclusion that the results of medical treatment have on the whole been unsatisfactory.

Results of cases that were operated on: 16 cases underwent operation. Since operation in one stage has been started only lately and the cases are too few in number, the results whether done in one or two stages have been assessed together. 7 cases got well and 9 died. That is: cured 44%, died 56%.

The mortality rate is admittedly high but considering that all these patients came in an extremly ill state after months of suffering at home, and remembering that without operation death was almost certain, very little blame can be attached to the operation itself as a cause of death.

Of the seven cases that lived, 3 are known to be alive and healthy, 3 years and 3 months, 1 year and 8 months and 1 year and 5 months respectively after operation. (The latter two being cases which were operated on by single stage method) The other four cases unfortunately could not be traced.

Cause of death in the 9 cases:

Gangrene of both lungs (2nd lung becoming gangrenous after operation on the 1st)	1
Aspiration pneumonia of the healthy lung (this was the boy who came in a state of orthopnoea)	1
Shock (one of them presumably developed pulmonary embolism in addition)	2
Shock and air embolism	1
Liver abscess + lung abscess	1
Hæmorrhage (3 months after operation). This patient had a multilocular abscess which became chronic. Lobectomy was considered but the patient never got into a state fit for it	1
Septicæmia	1
Anærobic infection of the chest wall and septicæmia ..	1
	9

There was reason to believe that blood transfusion might have saved some of these patients. "In a severe infection (with or without proved septicæmia) transfusion is indicated if the hæmoglobin recedes to 65%.... Before a severe surgical operation a minimal hæmoglobin figure of 70% should be aimed at" (Brewer-1938). Judging by this standard 15 out of the 16 operated cases definitely required blood transfusion, both as a pre-operative preparation and post-operative treatment. But our best efforts to utilise this valuable measure succeeded in only one case and he too died 3 days after operation (a patient who had 40% hæmoglobin—the case that died of shock and air embolism). It is found very difficult here to induce relatives to give blood and the want of a blood transfusion service is keenly and constantly felt.

Summary and Conclusion

From a study of a series of 21 cases of abscess lung admitted into the surgical wards, the following observations are made:—

(1) 17 of these cases occurred in the males, and 4 in females.

(2) Only one case followed an operation, the operation being excision of tongue for carcinoma. This is at variance with the observations of many others, some of whom state that 70% of the cases were apparently due to some surgical operations, tonsillectomy alone being held responsible for 56% of the incidence.

(3) One case was secondary to the bursting of a liver abscess. In two others, a possible cause was infection supervening on congenital bronchiectasis, while a third apparently followed an attack of influenzal bronchopneumonia.

(4) 15 out of this series of 21, had to be classified as "cryptic" or "idiopathic" in origin. A consideration of the occupation of these 15 had one factor in common, *viz.*, that they had to work long hours in dustladen, moist, ill-ventilated atmosphere. It is possible that this factor played a part in the production of the lung trouble.

(5) A study of 1162 consecutive post-mortems in 15 years and 9 months, showed 26 cases of lung abscess. 25 of these are males. No less than 6 of these had definite ulcerative colitis (2 of them amœbic and the other 4 probably combination of amœbic and bacillary dysentery). It is suggested that the cause of lung abscess in these cases was embolism from septic foci in the colon. No other probable etiological factor was evident from the examination of the records.

(6) The various modes of onset of the disease are detailed. Some common features in the onset have been brought out.

(7) Many cases reported to hospital for treatment after a long period of disability at home, the average duration being 3½ months. Majority of the cases were gravely ill at the time of admission, and this itself directly contributed to a great percentage of the operative mortality.

(8) Pain in the chest wall was no reliable guide to localise the abscess.

(9) The importance of properly taken x-rays cannot be sufficiently stressed. They are necessary not only for the localisation of the abscess from the operative point of view, but also for the institution of a rational method of treatment by posture. The various postures to be adopted for abscesses in various situations are described.

(10) Follow up of these cases shows that the results of treatment by medical methods alone is unsatisfactory, even in the best early cases of this series. These were the cases who refused operation because their disability was not great. This is all the more

unfortunate because these are the very patients that are likely to get complete and permanent cure after operation.

(11) The advantage of doing the operation at a single sitting and the methods of doing it are detailed. The results of operation and the cause in the cases that died are discussed.

(12) An efficient blood transfusion service will be of immense value and likely to save some of these cases who really require blood transfusion both before and after operation. But it cannot be sufficiently emphasized that these auxiliary methods will not improve results until and unless patients come early in the disease and are willing to be operated on and if quick improvement does not occur after a few weeks of properly instituted medical treatment. A mortality rate of 56% among the operated cases is admittedly high but the reason for this and the suggestions for improving the results have been discussed.

ACKOWLEDGMENTS

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NON-ROTATION OF THE GUT

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The position of the different parts of the intestinal tube may vary with regard to the extent and conditions of the rotation of the gut, when the U-shaped herniated tube returns within the abdominal cavity in the embryonic stage. In the adult human body normally and very commonly, the cæcum and ascending colon with a small part of the small intestine is found in the lumbar and iliac regions. The transverse colon is found transversely situated under cover of the lower part of the stomach and greater omentum. The descending colon, part of the pelvic colon and part of the small intestine are in the left lumbar and iliac regions. But cases are not rare in which the different parts of the tube are found in positions other than the normal.

The case under report is one such, in which the whole of the small intestine has been found situated in the right lumbar and right iliac regions and the whole of the large intestine practically situated on the left side of the same regions (Fig. 1). The other visceras are in their normal position. On opening the abdominal cavity and reflecting the normal greater omentum up the stomach is seen covering the upper parts of the loops of the large intestine on the left side and the coils of the small intestine are visible on the right side of the abdominal cavity. The small intestine is coiled up as normal and the large intestine is formed into four vertical loops one by the side of the other (Fig. 1).

In the lower part of the first loop by the side of the body of the fourth lumbar vertebra is the dilated cæcum with the vermiform appendix pointing to the right, towards the body of the fifth lumbar vertebra. The second and third longitudinal loops correspond to the transverse colon as they are found to be supplied partly by branches of the superior mesenteric artery and partly by the left colic artery and the fourth loop is the descending colon supplied by the ascending branch of the inferior mesenteric artery and it is continued down to the pelvic colon, which is supplied by the descending branch of the inferior mesenteric artery. The splenic flexure is rather more acutely bent and

situated in the colic region on the normal spleen and left kidney.

On reflecting up both the large and small intestines, it is found, that the mesenteries of the small

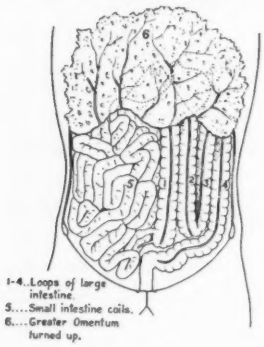


FIG. 1.

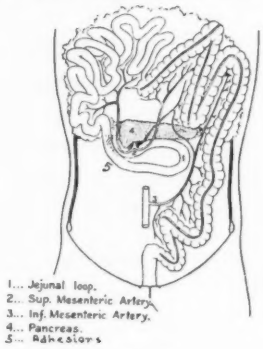


FIG. 2.

intestine and that of the large intestine is common and has a continuous attachment on the posterior abdominal wall on the anterior border of the body of the pancreas. The mesentery of the small intestine is attached only, around the head and the uncinate process of the pancreas along the root of the superior mesenteric artery and it has got no other attachment to the posterior abdominal wall. The whole of the small intestine is hanging free within the right part of the abdominal cavity, attached only by a small root to the part mentioned above and the superior mesenteric artery itself is passing down in front of the root of the loop of jejunum, which is attached by adhesions to the anterior surface of the second part of duodenum and also to the posterior abdominal wall below it (Fig. 2). These adhesions are derived from the mesentery of the small gut.

Below the attachment of the mesentery is the normal duodenum. It has no mesentery and is continuous with the jejunum, as is normal. The proximal part of the jejunum is forming a pretty long loop with the convexity to the left and is situated under cover of the first and second loops of the large gut (Figs. 2 and 6).

The lower band of the jejunal loop is passing up and to the right over the anterior surface of the third and the second parts of the duodenum to which it is attached by adhesions as already mentioned and is covered by a short mesentery derived from the first loop of the large gut which is extending up and to the right to gain its attachment to the neck of the pancreas. More on the right it is becoming continuous with the rest of the small intestine. This loop of jejunum has no mesenteric attachment in the posterior abdominal wall.

The root of the loop appears to be tightened down by these adhesive bands derived from the common mesentery. Over this loop also the superior mesenteric artery made taut by the weight of practically the whole of the small intestine is passing down and to the right in the mesentery of the small intestine.

The superior mesenteric artery is the main supply to the small intestine (Fig. 3). It is passing down and to the right in front of the root of the loop of the jejunum and the ramii intestini are passing to the right within the mesentery. The right colic and ileocolic branches necessarily are proceeding to the left to supply the colon. The middle colic artery, arising at the root of the superior mesenteric is passing in the mesocolon behind the ascending colon and supplying the second loop and part of the third loop of the large bowel and anastomosing with the ascending branch of the left colic artery. This artery is seen coming down and to the right after supplying the acute bend of the splenic flexure within a covered fold of peritoneum which looks very prominent due to the acuteness of the curve of the artery. The lower part of the desending colon and the proximal part of the colon is supplied by the descending branch of the left colic.

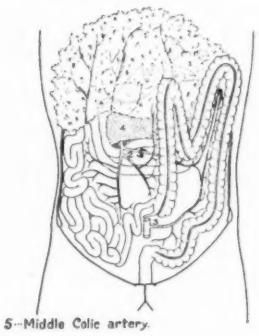


FIG. 3.

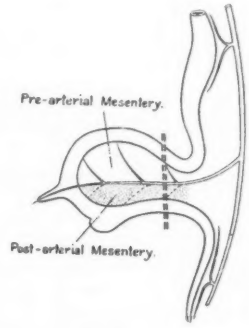


FIG. 4.

The venous drainage corresponds to the branches of the arteries.

DISCUSSION

According to the standard teaching the herniated U-shaped loop of the mid-gut which at first lies in the extra-embryonic cœlom is reduced and come within the

abdominal cavity in three stages. Primarily, the two limbs of the loop are cephalic and caudal, attached by a common mesentery, in the middle of which is the superior mesenteric artery. The cephalic limb is called the pre-arterial segment and the caudal one is the post-arterial segment (Fig. 4).

In the first stage, the developing liver by the great growth of its right lobe pushes the proximal part of the pre-arterial segment of the mid-gut loop, down and to the right. The effect of this on the post-arterial segment is, that it is forced, up and to the left, and thus rotate through 90° in an anti-clockwise direction. The pre-arterial segment is now placed on the left side and post-arterial on the right side (Fig. 5).

In the second stage, the pre-arterial segment elongates more rapidly than the post-arterial one and so long the cæcum is in the extra-embryonic region, the superior mesenteric becomes stretched and tense by the elongation of the post-arterial segment. At the same time the space in the intra-embryonic cœlom increases and the distal coils of the pre-arterial segment pushes the proximal coils into the cavity. Thus the proximal jejunum coils are reduced first, in the only available small space, dorsal to the superior mesenteric artery. By the additional push of the distal coils the proximal loop makes room for itself by displacing the median dorsal mesentery of the hind gut to the left flank of the cavity which it occupies. Gradually, the rest of the coils of the small gut enters the cavity and occupies both the sides of the cavity.

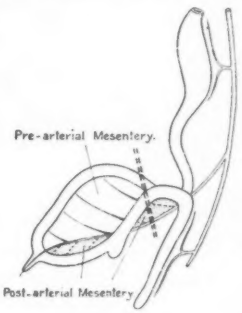
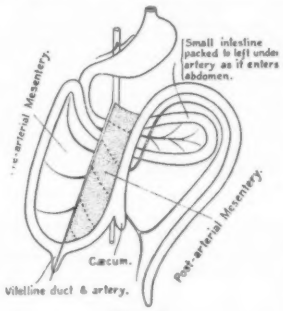


FIG. 5.

Next, the elongated post-arterial segment is reduced by the pull of the reduced small gut. In order to prevent a kinking at the junction of the pre-arterial and the post-arterial segment, the latter now rotates 90° anti-clockwise, upwards and to the right, crossing the root of the small gut at the point of origin of the superior mesenteric artery (Fig. 5). Thus the second stage of rotation is completed. The cæcum takes up its position under the liver on the right side and the transverse colon, crosses the root of the superior mesenteric artery transversely and its mesentery gets attached to the pancreas.

In the third stage the cæcum comes down in the right iliac fossa, the part of the colon coming down with it forms the ascending colon.

In this case there seems to have been some interference during the second stage of rotation. That the first stage of rotation took place is evident from the fact that the small gut is situated on the right side and the large gut on the left side. There was also the initiation of the second stage, as the proximal loop of the jejunum is seen passing to the left behind the superior mesenteric vessels. Thereafter, the next coils of the small gut failed to proceed to the left or to push the median dorsal mensentery of the hind gut to the left and recoiled themselves on the right side of the cavity. The post-arterial segment also failed to rotate up and to the right. It maintained its original position on the left side. The ascending colon is passing in front of the proximal loop of the jejunum—as it does during the first stage of rotation. The rest of the post-arterial segment is forming two other loops parallel to the ascending colon. The dorsal median mesentery of the hind gut was pushed to the left flank by these loops. So it is seen that the four loops are lying side by side on the left side of the cavity. The question arises as to how the post-arterial segment failed to rotate. Amongst the mechanical factors which are found in the specimen are (1) bands of adhesion derived from the common mesenteric atttachment on the pancreas anchoring the root of the loop of the jejunum to the anterior superior surface of the duodenum (Fig. 2). But this may be a late development and not the embryonic condition. (2) Superior mesenteric artery itself made taut by the weight of the hanging coils of practically the whole of the small intestine (Fig. 1). (3) There is a theory that in the embryonic stage the undue size of the umbilical ring would not prevent the unduly early return of the cæcum. Apparently, it seems that there is no necessity of the second stage of rotation if the umbilical ring is of undue size and allow the reduction *en masse*. But,


Small intestine packed to left under artery as it enters abdomen.
Pre-arterial Mesentery.
Cæcum.
Post-arterial Mesentery.
Vitelline duct & artery.
FIG. 6.

is there any factor to maintain the undue size of the umbilical ring? It is probable that the taut superior mesenteric artery may not allow the reduction of the whole elongated coils of the small intestine which is already on the right side after the first stage of rotation. They in their turn, mechanically help in maintaining the undue size of the umbilical ring. Taking advantage of this undue size of the ring and the pressure of the elongated coils of the pre-arterial segment, it is the distal part of the post-arterial segment which is already on the left side that reduces first, and then the rest of the segment with the cæcum. The pre-arterial segment is reduced later, and takes up its position on the left side of the cavity. Thus it appears that a tense superior mesenteric artery is the most probable abnormal factor when the sequence of rotation is abnormal.

RAUWOLFIA SERPENTINA—PHARMACOLOGICAL ACTION AND ITS VALUE IN THE TREATMENT OF HYPERPIESIA*

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Rauwolfia Serpentina (Gen. Apocyanaceæ.) Vern. —Sans.—Sarpagandha, Chandrika. Hind.—Chota Chand. Beng.—Chandra. Tel.—Patalgandhi.

Characters and Habitat—It is a climbing shrub and grows on rich soil generally. It is found in the Tropical Himalayas, low altitudes of Sikkim, Assam, Pegu and Tannaserim.

Parts used—The root, the leaves and their juice.

Therapeutic Uses—In the indigenous system of medicine this drug has been put to various uses for a very long time. Its root was used as an antidote to the bites of poisonous reptiles and insects. The juice of the fresh leaves has been mentioned for the treatment of corneal opacities. The root decoction has been prescribed as a uterine stimulant to help child-birth. The root is also used as a febrifuge, as a bitter tonic and as a remedy for painful affections of the bowels.

Recently the drug has been used for the treatment of insomnia, insanity, hysteria, hypochondria, and for reducing high blood pressure. Possibly, the sedative effects of the drug, by soothing the irritated system of a nervous patient, might be helpful in bringing the blood pressure down, and this may be the only way of its action in lowering the elevated blood pressure of individuals of highly nervous temperament, without much affecting the cadiovascular system.

Chemistry—A detailed chemistry of this drug has been worked out by some authors lately (Sen and Bose, Siddiqui and Siddiqui, and by the Chemistry Department, School of Tropical Medicine, Calcutta). They have found two different groups of alkaloids—the ajmaline and the serpentine groups. The other constituents are resin, starch, fatty oil, pot. carb. and phosphate, silicate, iron, and manganese.

Experimental

With a view to study the action of the drug in reducing the blood pressure of human beings, I first experimented to study the action of the crude drug on the blood pressure of dogs and on the blood vessels of frogs. It was after this that I gave a clinical trial to the drug in the form of Serpina tablets (prepared from the crude root of the plant by the Himalayan Drug Co., Bombay). In my experiments too I used the tablets on animals. In order to study its nature of action on other plain muscles, I experimented on isolated pieces of intestine and uterus of rabbits.

I Experiment—To study the action of the infusion and decoction of the root of Rauwolfia Serpentina and of Serpina tablets on the blood vessels of frogs.

Method—The infusion (1/5) and the decoction (1/5), freshly prepared in the laboratory, were injected in the perfusing fluid. Also a solution of Serpina tablet (1/100—1/500) was similarly used, and liqr. trinitrini (1/10) was also used, just to compare the nature of action of the drug. It was noted that in the case of the infusion and the decoction and the solution of Serpina tablet, the number of bubbles of the perfusing fluid definitely decreased, showing thereby that vasoconstriction took place (*Cf.* p. 268, *Ind. Jr. of Med. Res.*, Vol. XXI, 1933-34, in which Col. Chopra and his co-workers conclude that it produces vasodilatation). With liqr. trinitrini the number of bubbles increased, demonstrating the vasodilator action.

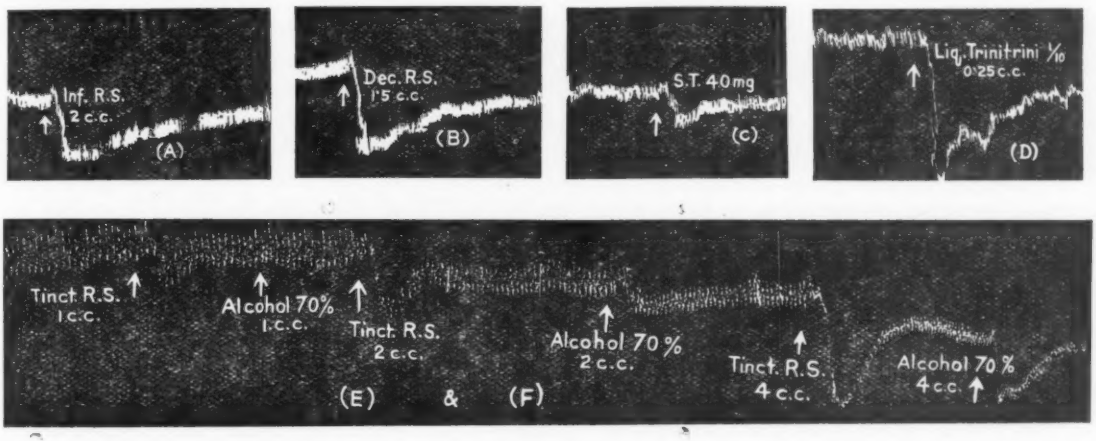
* Since the completion of the above work by me, Dr. B. B. Bhatia, M.D. M.R.C.P., Physician, K. G. Hospital, and Head of the Department of Pharmacology, read a paper on his clinical trial of the drug in the treatment of hyperpiesia, at the last U P. Medical Conference held at Benares.

II Experiment—To study the action of infusion and decoction and tincture of the root of Rauwolfia Serpentina and of Serpina tablets on the blood pressure of dogs.

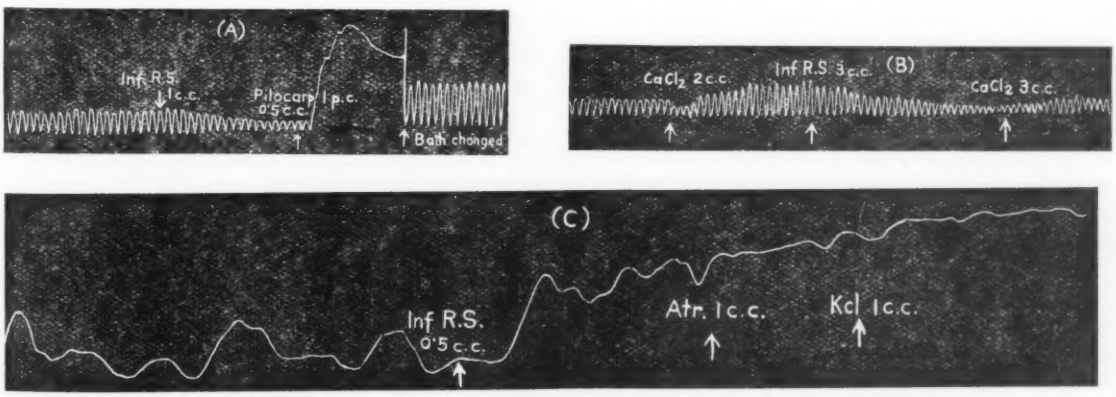
Method—In this experiment too, the infusion and decoc. (1/5) were prepared freshly in the laboratory. But besides these two, a tincture was also prepared from the root (1/10 str.). The effect of the tincture, a solution of Serpina tablets, and of liqr. trinitrini 1/10, was also recorded on the same dog.

Injection of infusion and decoction from 1/2 to 2 c.c. into the femoral vein of the dog produced varying degrees of fall in the blood pressure. An injection of the tincture produced a much more marked fall in the blood pressure. Simultaneously, the effect of an injection of alcohol that was used to prepare the tincture, was also recorded, to eliminate the effect due to alcohol in the tincture. It will be noted from the accompanying graphs that the effect produced by the tincture is much more marked than that produced by an equal quantity of alcohol.

The effects produced by an injection of Serpina tablet solution and of liqr. trinitrini are also shown in the graphs.



Kymographic tracings of the action on the blood pressure of dog: A—Inf. Rauwolfia Serpentina. B—Decoc. Rauwolfia Serpentina. C—Serpina tablet. D—Liqr. Trinitrini. E and F—Tinct. Rauwolfia Serpentina. (Reference to II Experiment).



Myographic tracings of the action on the intestine and uterus (non-gravid) of a rabbit: A and B—Action on the intestine. C—Action on the uterus. (Reference to III Experiment).

III Experiment—To study the action of infusion of Rauwolfia Serpentina on isolated pieces of plain muscle of the rabbit's intestine and uterus.

Action on intestine—Freshly prepared infusion (1/5) was used in this experiment. A one inch long piece of small intestine was suspended in the Dale's bath, filled with mammalian Ringer's solution continuously oxygenated, and maintained at 37°C. The infusion was added to the bath and it was seen to produce inhibition of the intestinal movements (*Cf.*, p. 226, *Ind. Jr. Med. Res.*, Vol. XXI, 1933-34, in which the observation of Col. Chopra and others is that the drug has a stimulant effect on the motility of the intestine). Parasympathetic stimulants like pilocarpine, could be shown to have their normal action on being added to the same bath to which the infusion was added. Also it was seen that the drug neutralised the action of calcium chloride 1 per cent till the movements became much diminished. To the same bath, when calcium chloride was again added, there was very feeble increase in the movements (*vide* graphs).

Action on uterus—The apparatus was arranged as above. The drug produced an increase in the tone as well as amplitude of the movements of the uterus, and addition of a parasympathetic paralysant like atropine or a muscle depressant like pot. chloride, did not produce any effect. This stimulant action is in agreement to that obtained by others.

Discussion

Observing the effects of the drug on the blood vessels of frogs (as noted in Expt. I), I conclude that there is vasoconstriction while others have observed that there is vasodilatation. So far as its effect on blood pressure is concerned, there is a fall. Its effect on the plain muscles of the rabbit's uterus is a stimulant one, but on the intestine of the same animal, the drug seems to have a depressant action, which is not in keeping with the results obtained by Col. Chopra and his co-workers. It would be interesting to repeat the experiments with isolated pure individual alkaloids separately rather than with the total alkaloids present in the crude form of the drug as attempted by me. It is quite apparent from the above that the action of the crude drug differs at least on two tissues, that on the frog's blood vessels and on the rabbit's intestines, from the results so far obtained by others.

Clinical Trial Reports

For a clinical trial of the drug, I used the Serpina tablets, a preparation from the bark of the roots of Rauwolfia Serpentina in crude form. I tried this remedy on a few cases of high blood pressure to confirm the above experimental findings. In almost all the cases I have been able to observe a marked fall in their blood pressure, which they maintained even after suspension of the treatment for over 8 to 12 months. Of course, the patient should not indulge in any excesses either of alcohol, physical or mental exertion, worries, etc., and lead a life of moderation. Except for a mild laxative action, no other harmful effects were observed during the period of treatment. The ages of the patients varied from 24-69 years, of both sexes, vegetarians and non-vegetarians, and without any other important physical findings except, of course, high blood pressure.

A few case reports are cited:

Case 1—Patient Mr. R. K. K, 38 years, had an attack of hemiplegia 4 months before he came to me. At that time he had very high blood pressure, and he maintained some blood pressure after that too. Occassionally he used to feel heaviness of head, especially after any exertion, and felt very dull. His blood pressure as noted by me on his first visit was 168|130. In the beginning he was given 6 Serpina tablets a day for 7 days. Blood pressure lowered down to 148|123. The dose was reduced in the second week and his blood pressure further lowered to 131|110, at the end of the second week. The treatment was repeated after a gap of a fortnight with a reduced dose as there was only a very insignificant rise now. His blood pressure came down to 130|105 and after 15 months cessation of treatment, his blood pressure is 126|82.

Case 2—Patient Mr. S. R. R., 69 years, complained of constant headache and diminution of vision for the last five years. On examination it was found that he had cataract of both the eyes and he had high blood pressure too—210|175. In the beginning he was given only 4 tablets a day for four days, increased to 6 tablets a day for seven days, and then after a gap of a fortnight, 4 tablets a day for 9 days, brought down his blood pressure to 162|126. He maintains this level after cessation of the treatment for seven months.

Case 3—Patient Mrs. P. D., 24 yrs., complained of hot flushes in the face and head, sensation of heat in the soles and palms for 2 years. Menstrual history normal. Blood pressure 180|139. She was given 6 tablets a day for 8 days in the first instance, and it was reduced to 4 tablets a day for 4 days. Blood pressure now was 156|115. Treatment was resumed after a fortnight with 6 tablets a day for eight days, and then 4 tablets a day for 4 days—this time blood pressure came down to 122|80. The treatment was discontinued and again

resumed till she began to maintain blood pressure between 121|70 and 115|70. This level she maintained after 9 months of stoppage of treatment.

Case 4—Patient Mr. Q. A. W., 32 yrs., complained of a feeling of giddiness, dullness of mind, darkness under the eyes, and fits of heart palpitation sometimes, for 9 months. Nothing abnormal detected except blood pressure 179|135. He was kept on Serpina tablets and after treatment for 13 days, blood pressure was 138|109. After a month the drug was again repeated for 7 days, and his blood pressure was now 128|90. This level he showed 12 months after stoppage of the treatment.

Case 5—Patient Mr. K. S., 26 yrs., no complaints. High blood pressure detected while being examined for insurance. It was 162|120. He was kept on 9 tablets a day for 2 days and 4 tablets a day for 4 days. Blood pressure now was 130|90. After a gap of two weeks, the treatment was repeated with a reduced dose for 7 days. His blood pressure came down to 126|85, which he maintained even after 11 months of treatment.

Summary

1. The action of the infusion and decoction of the root of Rauwolfia Serpentina, and of Serpina tablets was studied on the blood vessels of frogs, and on the blood pressure of dogs. In the latter experiment, a tincture prepared from the root in the laboratory was also tried.

2. It was observed that the drug produced vaso-constriction in the frogs, and lowered the B. P. in the dogs.

3. The action of the infusion of the root was also studied on rabbit's isolated pieces of uterus and intestine.

It was seen to have a stimulant action on the uterus whereas it had a depressant action on the intestine.

4. A clinical trial of a preparation from the root (Serpina Tabl.) was given to a few cases of hyperpiesia.

The results confirmed the experimental findings on blood pressure.

Ackowledgment

In the end I express my heartfelt thanks to Dr. B. B. Bhatia, M.D., M.R.C.P., the Head of the Department of Pharmacology, King George Medical College, Lucknow and to Dr. K. N. Sinha, F.R.F.P.S., the Senior Lecturer of the Department for the able guidance and kind assistance afforded to me and for their permission to publish this paper.

ROLE OF VITAMIN C IN GROWTH AND REPAIR OF TISSUES

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Vitamin C, also known as the antiscorbutic vitamin, is one of the essential elements of nutrition, the importance of which in health and disease has been realised more and more during the past two decades. There is an extensive literature on hand drawing the attention of medical men to the therapeutic value of vitamin C, and therefore, a survey of some of the experimental and clinical observations made on the subject may be useful.

Vitamin C is found in large quantities in citrus fruits and in green vegetables. It was shown by Giri (1939) that Indian gooseberry (Phyllanthus Emblica) contains this vitamin in large quantities, *i.e.*, as much as 9·4 mg. per 1 c.c. of its juice. In animals it is found to be stored in the anterior lobe of the pituitary, the adrenals, the intestine, and the eye, when adequate quantities are supplied in the food. This vitamin is identical with ascorbic acid.

It is stable when pure and dry, but is unstable in solution. But in the tissues it remains stable due to the action of protective substances. It is excreted from the body mainly by the kidneys.

The relation of vitamin C to healing of wounds was found in the literature ever since the time of Hippocrates. "Richard Walter in his account of Lord Anson's 'Voyage Around the World' in 1740, described the effects of scurvy among the crew where he stated that 'scars of wounds that had been for years healed were forced open'." (Hartzell, 1941).

More recently, the condition of avitaminosis C has been the subject of many experimental workers. Lanmann and Ingalls, quoted by Whipple (1940), demonstrated that lack of the vitamin led to poor healing of experimental surgical wounds in guineapigs. Smith and McConkey, quoted by Archer (1936), showed that guineapigs kept in a subscurvy state but getting enough of vitamins A and D were liable to develop duodenal ulcers. They operated on three groups of guineapigs, by opening the abdomen, boring

a hole through the stomach with a cautery and scarifying the wall of the duodenum with a dental burr. Of the three groups of guineapigs, one group was fed on good diet and the second and third groups were fed on scorbutic diet starting from 15 days prior to the operation. To the second group, 10 c.c. of canned tomato juice were added to the diet from the day of operation. In the first group, they found that all the wounds healed normally in 18 days. In the second group also, they could find normal healing after 21 days. In the third group of guineapigs where vitamin C was not given, throughout the experimental period, all the guineapigs died after one or two weeks and the wounds did not show any sign of healing. Four out of the five developed duodenal ulcer, and two of these developed ulcer at the site of the gastric puncture.

McCarrison, quoted by Archer (1936), observed that guineapigs fed on scorbutic diet, developed congestion, and hæmorrhagic infiltration of the whole intestine with occasional punched out necrotic areas. Some of them showed necrotic areas in the stomach. He carried out another interesting experiment on albino rats. One group of them was fed on diet similar to those of the poorer classes of Madras, and another group on diet similar to those of the poorer classes of Travancore. 11·1 per cent of those of the first group and 22 per cent of those of the second group developed gastric ulcers. These experiments on animals indicate the value of vitamin C in nutrition for maintaining the integrity of the intestinal mucous membrane, and show how it is a necessary factor in the healing of wounds of the intestinal tract.

"Every true surgeon cannot help being interested in wound healing" was the remark made by Dr. Allen O. Whipple in his presidential address to the American Surgical Association. The importance of this remark can be realised well when we go through the analysis by Payne, quoted by Archer (1936), of 16 cases of death due to peritonitis after operation on the stomach, at St. Bartholomew's Hospital. In 12 out of these 16 cases "the peritoneal infection appeared to have arisen as a bacterial leakage at the site of anastomosis following almost complete absence of any fibrinous response along the suture line. The sutures stood as though the operation had just been completed and there was no sign of fibrin or healing." Archer and others quoted the above analysis in their study of the relation of subscurvy state to gastric and duodenal ulcer, in order to impress the necessity of vitamin C therapy for a fibrinous response for healing in operated cases of gastric and duodenal ulcers where a serious condition of multiple avitaminosis has to be expected resulting from a strict dietetic regime they undergo for prolonged periods. They recommend massive doses of important vitamins starting from four days prior to operation.

The experiment performed by Crandon (1941) on himself, to find out how long it takes to become scorbutic and to find out the effect of avitaminosis C on healing of wounds, is an interesting and enlightening addition to the knowledge of the role of vitamin C in the body. He kept himself on a scorbutic but otherwise fully adequate diet on October 19, 1939, and remained on it until May 7, 1940, (*i.e.*, for over 6½ months). The plasma level of vitamin C fell to zero on the 41st day and remained at this level throughout the experiment. After 17 weeks he developed hyperkeratotic papules on the buttocks, which are supposed to constitute an early sign of scurvy. Three weeks later he developed petechial hæmorrhages around the hair follicles of the legs. Marked fatiguability and lassitude began in the sixth month. It is an interesting fact that gums were normal throughout the experiment. In the third month after the diet was started, a 2½" experimental incision was made down through the deep fascia of the lumbar region and a specimen was secured for biopsy on the eleventh day. The wound healing was found to be quite normal. At exactly six months, a second incision was made in the corresponding position on the other side of the back. It was found impossible to suture the transversely divided sacrospinalis fascia because the sutures stripped out between the longitudinal fibres. The specimen taken out for biopsy showed an apparent healing on the surface but the tissues beneath the skin were not healed at all but contained a dry firm blood clot. The same wound was resutured and he was put on massive doses of ascorbic acid intravenously, in addition to his experimental diet. A specimen taken out of this for biopsy on the 10th day showed normal healing. This remarkable and interesting experiment indicates how important the role of vitamin C is in tissue repair. The same author reported cases of disruption of abdominal wounds after operations where he could show that severe hypovitaminosis C was the causative factor.

Recently, Lyle and McLean (1941) of two R. A. F. Hospitals reported their experience with the use of large doses of ascorbic acid in the treatment of severe

inflammatory conditions of the cornea necessitating hospital admission. They described 6 cases where local treatment over a long time being of no use, massive doses of ascorbic acid given intravenously in addition to the local treatment resulted in rapid and dramatic improvement. In four other cases they instituted the ascorbic acid treatment from the date of admission, and found it a success. They, therefore, recommend that ascorbic acid by injection and by mouth are of high value in inflammatory conditions and ulcerations of the cornea.

Lexer (1939) reported about "the retardation of healing of fractures, in guineapigs partially or wholly deprived of vitamin C, owing to the failure of blood supply due to the collapse of the capillaries; and that addition of vitamin C to the diet improved the healing within 7 days." Einhauser (1939) writes that guineapigs stood a better chance of surviving severe burns if they received injections of adrenal cortical extract and vitamin C given together. He reported a case of burns where a boy aged 13, with a burn on more than half his body surface, was treated from the beginning with injections of a cortical preparation and massive doses of ascorbic acid. His survival and good recovery were partly attributed to this therapy. An attempt was made last year to find out the vitamin C status of ophthalmic inpatients of K. G. Hospital, Vizagapatam, by means of the intradermal test and it was shown that in patients suffering from inflammatory conditions of the eye the test showed low vitamin C status in the majority of patients.

In order to ascertain the role of vitamin C, many workers have studied the macroscopic and microscopic changes in healing in healthy and scorbutic animals and human beings. Hoger, quoted by Whipple (1940), was the first to show that deficiency in collagen formation resulting in atrophy of connective tissue occurs in scorbutic guineapigs. Lanmann and others showed that not only avitaminosis C, but also partial deficiency in vitamin C prolongs the "lag period" in wound healing, and delays the recovery of tensile strength due to insufficient collagen fibre formation. Hess, quoted by Archer (1936), states from his experience that "the wounds and ulcers of patients with scurvy heal badly and that they assume a hæmorrhagic aspect, the edges becoming bluish or livid and showing no tendency to heal." He further states that "even scars which have existed for many years change in colour and show an altered state of nutrition, and ulcers long healed break out afresh." Wolbach, quoted by Hartzell (1941), states that deficiencies of vitamin C result in deficiency of collagen formation in matrices of white fibrous tissue, cartilage, bone and dentine. He further states that pathologic picture is produced by "resorption of intracellular material in both growth and reparative reactions." In such conditions if vitamin C is supplied, he states, histologic repair immediately occurs. In the human experiment described above, conducted by Crandon on himself, he reports that the unhealed specimen showed an absence of healing and absence of collagen in granulation tissue. Hunt (1941) in his recent histological studies of subscurvy animals, observed that "there was a failure to mature on the part of the mesodermal cells and the intercellular fibrillar material laid down by them. The healing of the wound was profoundly disturbed by the occurrences of hæmorrhagic effusions and defective phagocytosis. Further deprivation of vitamin C after healing had been completed, lead in 2-3 weeks, to regression of the normal maturation processes in the wounds, followed by spontaneous rupture."

Mullick and Ahmad (1941) reported the effect of orange juice on the assimilation of calcium and the histological structure of developing teeth. "In a scorbutic tooth the odontoblast layer is disorganised, the predentine is calcified, an irregular layer of bone known as innerdentine is formed, and Tomes canals are fewer and are only found radiating from predentine outwards."

Klein (1938) demonstrated vitamin C in bone and muscle development. By staining pig embryos by $AuCl_3$ method, he demonstrated the presence of vitamin C granules in the osteoblasts which were in relation to collagenous fibrils in the developing bone. He also demonstrated that vitamin C was present in the Golgi apparatus of embryonic, developing, striated muscle and in the histiocytes in degenerating striated muscle.

Jenney and Toro, quoted by Hartzell (1941), demonstrated that addition of ascorbic acid to cultures *in vitro* of fibroblasts, resulted in a sudden increase in collagen fibrils.

Locke and others (1939) are of opinion that administration of vitamin C improves the capacity to maintain sustained and effective circulation and to retard bacterial proliferation. Menschikov (1939) in a discussion of importance of vitamin C in erythropoiesis states

that an inhibition of the change of reticulocytes into erythrocytes occurred in experimental scurvy.

Thus, there is an extensive literature which directs our attention to the utility of vitamin C in health and disease. It appears to be the chief element concerned with the growth and maintenance of the connective tissue, and the integrity and vitality of the mucous membranes in the body. It is also associated with the maturation of reticulocytes to erythrocytes, the integrity of the capillary walls and maintenance of circulation in capillaries. The growth of bones and teeth is also related with the vitamin C status of the body. So, it is highly essential that the nutritional and therapeutic value of vitamin C should receive proper attention of all medical people in their practice of medicine.

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WAR-TIME PROBLEMS BEFORE THE MEDICAL PROFESSION

A period of great uncertainty now lies in front of us. We do not know how long it will last. The incidence of this uncertainty is becoming worse every day. Evacuation has become the order of the day. There has already been a heavy exodus from the cities wherever there are risks of air raids in near future. The normal city life has been dislocated in various ways. Nor has the medical profession escaped the effects of this dislocation.

Population in a city like Calcutta, Madras, Bombay and Vizagapatam etc., has dwindled to a very great extent. As a result medical men have lost a considerable part of their practice. Gynæcologists, in particular, have been hard hit because of the almost complete removal of the women population from urban areas. It is, however, not simply a question of the loss of practice which many medical practitioners have to face. Let us not judge the issue only in terms of our own profit and loss. There is a social aspect of great import, which must be considered in this connection. Heavy congestion has resulted in many mofussil towns and villages. The danger of diseases has increased. Epidemics may break out at any time. In fact, certain places, to judge from available reports, have already been affected. In all these places where population has doubled or trebled overnight, the available medical facilities have not increased in anything like the same proportion, if they have increased at all. The reasons are easy to understand. Doctors cannot at a moment's notice leave the centres where they normally carry on their practice. Even when clients decrease, it is, in most cases, worth their while to remain where they are, a sudden change of centre would involve them in still greater loss. In addition, there was a feeling when the evacuation first began, that the uncertainty might be of short duration. In any case, doctors are bound to be one of the last groups to evacuate.

Thus we are confronted with an anomalous situation. Doctors have lost patients while patients do not find doctors. With the redistribution of the urban population a maldistribution of medical facilities in the country has resulted. Both are now suffering. With the hot weather now on, seasonal epidemics may break out on a serious scale in mofussil towns. The risks are all the greater as many municipalities have not been able to tackle the problem of sanitation with which they have been faced as a result of the increased population. The situation is fraught with great danger because, as already mentioned, the medical facilities, available in such localities are far from adequate to cope with the new situation.

There is yet another aspect from which the question has to be examined. Cities are the most important centres of medical education. A situation may easily arise when all institutions for medical training in cities will have to be closed down. What will happen with the students who are already receiving training? If these students are simply sent home and no facilities are provided for their training in more peaceful surroundings, not only will the students suffer, but there will be a serious social loss. The supply of trained medical men will sharply fall and a relative dearth of practitioners will result. It is well to remember in this connection that there is always an increase in the incidence of diseases in the period immediately following a war. As we all know, the influenza epidemic took a heavy toll of men after the last war. In fact, considerably more people died of influenza alone than were killed during the four years of war. A very difficult situation will arise if an increase in epidemic diseases synchronises with a fall-off in the supply of qualified medical men.

These are grave problems. If we assume that the present uncertainty will last long, as it very well may, it becomes urgently necessary to devise ways and means now for their solution. We must plan without delay if the hardship to the people is to be kept at a minimum.

As regards medical training, the obvious remedy would be to provide facilities for such training in centres which are most likely to lie outside the danger zone. Other things remaining equal, preference should be given to those mofussil towns where there already exist some medical college. For it would be easier to provide more facilities where already a nucleus for training

exists than start new institutions overnight. Nevertheless, once the existing centres have been utilised to the fullest extent, it may still be necessary to start more centres, if all the students of cities like Calcutta, Madras, Vizagapatam, Bombay etc., are to be absorbed. Without doubt we shall have to depend largely on improvisation. Laboratory facilities cannot be provided in such centres on a satisfactory scale. There may be a dearth of essential instruments. A readjustment in the curriculum will be necessary. It is essentially a question of making the best of a difficult job. Nevertheless, in spite of all these handicaps even an improvised method will be far better than a complete stoppage of the training of so many students.

As regards the question of a redistribution of the medical facilities, the solution is no less difficult. As we all know, even in normal times, there is an excessive concentration of practising physicians in higher urban centres. This is due to the fact that medical men realise that, on the whole, they have much better prospects in such centres. Yet, from the angle of the community, as a whole, this is not an ideal arrangement. It would be far better if a sufficiently large number of qualified medical men could be assured of a reasonable income in areas outside big cities and thus be induced to live in mofussil. In that way, medical men could be spread over the country on a more rational basis and the country would stand to gain. But how could that be brought about? We believe that the best way would be for the authorities to recruit medical men and appoint them as State employees. Only a Medical Service administered along the lines indicated can end the maladjustment in the supply and demand of medical facilities in normal times. If such a service existed, the difficulties which have been mentioned, would not have arisen, because members of this Service could be easily distributed in the areas where congestion had increased. The present situation is a challenge to create such a service.

It is clear that such steps call for official initiative. Authorities have no doubt their hands full with pressing problems. It is, however, well to remember that if to fight the war is a question of life and death, to fight disease is no less so.

* * * *

The Punjab Provincial Branch of the Indian Medical Association is to be congratulated on the successful removal of a long standing grievance of the medical profession in the matter of attendance at Court when summoned for the purpose of giving evidence before the Court. The usual practice was to ask the medical practitioner to attend the court from 10 o'clock in the morning while actually he might have been called after waiting for many hours and sometimes a whole day was wasted and probably was asked to come another day with no better fate.

This practice is also in existence, as far as we are aware, in other provinces as well. We now learn that the Registrar of the High Court of Judicature, Lahore, has sent the following circular to all District and Sessions Judges in the Punjab and to all the District Magistrates in the Punjab *viz.*,—"The Hon'ble Judges decided that a medical practitioner should not be summoned from 10 A.M. as a matter of course, but when the Court thinks will be able to examine him. His evidence should be taken at the time for which he is summoned or as soon thereafter as practicable."

We offer our grateful thanks to the Hon'ble Judges of the Lahore High Court for the removal of the grievances and we fervently hope that the above arrangement should be followed in the other provinces as well. We draw the attention of our various provincial branches to approach the proper authorities in their respective provinces for necessary action in the matter.

* * * *

While the Indian Medical Association at its various conferences has been pressing the need for a balanced diet and an enquiry commission on nutrition, in which they have the entire backing of the public, it seems strange that the Ambala Military Supply Department tried to sell by auction about 2000 bags of condemned *atta* containing lot of maggots to the civil population in the local Suddet Bazar instead of destroying them. Had it not been for the timely protest of the Punjab Provincial Branch of the Indian Medical Association the sale would have continued and the public would have used the condemned foodstuff. This, if true, shows an utter lack of feeling towards the civil population on the part of the military authorities. We are grateful to the *Tribune* and the *Hindusthan Times* for championing the protest launched by the Provincial Branch in this matter which resulted in stopping the sale.

CASE NOTES

SOME CONGENITAL ANOMALIES

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1. *Hemivertebræ with missing ribs:*

A boy aged 12 years fell from his bicycle. Five days later when he was looking at the mirror he found that his head was situated on the right side of the middle line. He associated this appearance with the accident. The parents realised the abnormality only when he pointed it out. There was absolutely no pain or any other complaint. The boy was very intelligent.

On clinical examination the head was situated on the right side of the middle line and the cervical spine showed scoliosis. There was no pain on percussion; the movements were also painless.

On radiological examination (*vide* plate facing page 191) the right parts of the first and second dorsal vertebræ have not developed. The first dorsal vertebra is more incompletely developed than the second dorsal vertebra, so that the upper surfaces of these two vertebræ are forming a continuous slope directed downwards and to the right. The seventh cervical vertebra has slipped downwards and to the right on this slope and hence the scoliosis. The lower and right corner of the seventh cervical vertebra is reaching the third dorsal vertebra so that the first two vertebræ are not available on the right side; consequently, the first three ribs which arise from them are missing on this side.

The complete absence of the right first three ribs corresponding to the hemivertebræ makes a diagnosis of a congenital abnormality certain.

No other congenital anomaly was present. The ribs were never removed and the child felt perfectly fit.

2. *Bony union of ribs:*

This case shows a band of bone uniting the posterior portions of the sixth and seventh ribs of the right side. (*vide* plate facing page 191).

This abnormality was met twice in about 2,500 pictures.

It should not be confused with any pathological condition in the lungs.

3. *Supracondyloid process of the humerus:*

The arrow in the skiagram (*vide* plate facing page 191) points to the supracondyloid process. It should not be confused with periosteitis or a sequestrum.

The arrow points to the supracondyloid process an extra slip of the pronator radii teres muscle.

LOBAR PNEUMONIA WITH ACUTE DILATATION OF THE STOMACH

G. L. SHARMA, M.D.
AND
I. B. BASU,
Nagpur

A. A., a Muslim, aged 19 years was taken ill on the night of 5-12-41 with chill, fever and cough, which was dry and hacking. Temperature varied between 100°F. and 103°F. He was seen on 8-12-41 by one of us (I. B. B.). Temp. 102°F., pulse 110 p.m., respiration 58 p.m. Left lower lobe of the lung was consolidated. He was put on M. & B. 693 tablets, alkaline diaphoretic mixture, antiphlogistine to the chest wall and plenty of fluids. G. L. S. was called in to see him on 11-12-41 at 8 a.m. when he had a vomit—very large quantity, coffee ground. Temperature 102·4°, pulse feeble and quick 124 p.m., respiration 54 p.m. He looked very toxic and restless. Tongue dry and coated, consolidation of left lung base. Abdomen distended, particularly the epigastrium. Spleen and liver not palpable. Gastric resonance enormously increased. Morphia gr. ¼ with atropine sulphate gr. 1/100 given subcutaneously. Mustard plaster over the epigastrium 6 hourly. Hiccough started, and he had several more vomits—now greenish coloured. The total amount of vomit measured nearly 5 gallons on 12th December, 1941. It was decided to put in a Ryle's tube and drain the overfull stomach. 2½ gallons of greenish coloured fluid was aspirated and the tube left in for 36 hours, and the aspiration continued at 2 hourly intervals. Eserine salicylate gr. 1/200, was given subcutaneously on four occasions at 4 hourly intervals. From the 11th December, 1941 to 15th December, 1941, he was having I. V. glucose 25 per cent 25 c.c. twice a day. One pint of subcutaneous saline was given on the 12th December, 1941. From the 16th December, 1941, he made satisfactory progress.

Comment—Acute dilatation of the stomach is an uncommon condition met with following an abdominal

operation. In medical practice it is rarer still. In none of the text books of medicine is it mentioned, as a complication of pneumonia.*

It was first described by Kundrat in 1871. Since then a large amount of work has been done to explain the condition. The vomit is so enormous that one naturally asks—"where does it all come from?" In fatal cases the stomach, at necropsy, is so much dilated that it may extend into the pelvis. The stomach pushes down a mass of small intestines causing a drag upon the mesentery and this strangles the duodenum. The initial gastric dilatation is possibly due to vagal shock and toxæmia.

* It is mentioned in p. 1204, Text Book of the Practice of Medicine, edited by Price, 4th edition, 1934.—EDITOR, *J. I. M. A.*

A CASE OF SNAKE BITE

BIRESWAR RAY, L.M.F.,
Panchgarah U. B. Dispensary, Hooghly (Bengal)

On 5-1-42, I was called in to attend a case of snake-bite.

History—The patient, a Hindu male aged 20 years while coming back from his work by five in the evening was bitten by a snake on his right leg in a paddy field. The snake got a good grip of the bitten toe, and it was dislodged by throwing the leg. It was seen and identified by the patient as a cobra, black in colour and with hood. Immediately after the bite he walked for about 4 minutes when he felt dizzy and fell down in the field. The people working in the neighbourhood at first thought him to be drunk but soon they came to his assistance and heard about the snake bite. They put a light ligature above the wound and brought him to a house of the locality where I saw him. It was about a quarter of an hour after the bite.

I observed the following:

The patient completely unconscious, pupils slightly dilated, pulse and respiration very slow, blood oozing from the wound.

Treatment—The following procedure was adopted: (1) Strong rubber ligature was applied in two places well above the bite. (2) The wound was scarified by a scalpel and potassium permanganate was applied. (3) Next 1 c.c. of adrenaline chloride 1 in 1,000 was injected but no change in the rate of the pulse was observed. (4) 10 c.c. of Anti-venemeux C. (Paris) was injected. 5 minutes later another 10 c.c. was repeated.

By 1½ hours time the patient was seeen to be regaining his consciousness, feeling no more dizzy, answering questions intelligently and in weak normal voice. He complained of excruciating pain at the site of the ligature and requested to remove them.

Seeing him much improved the ligature were slightly loosened. After about 2 hours' time the patient was completely alright and walked home, a distance of 4 minutes. Only blood was oozing from the wound, which continued till next day. The wound was dressed in the ordinary way.

The rapid recovery within 2 hours' time from all the symptoms of snake poisoning impressed on me and those present there the wonderful action of anti-venemeux serum.

The patient did not show any signs and symptoms of colubrine poisoning. He was unconscious in only 4 minutes and recovered with only 20 c.c. of the serum. These raise the question—was he bitten by a cobra at all?—EDITOR, *J.I.M.A.*

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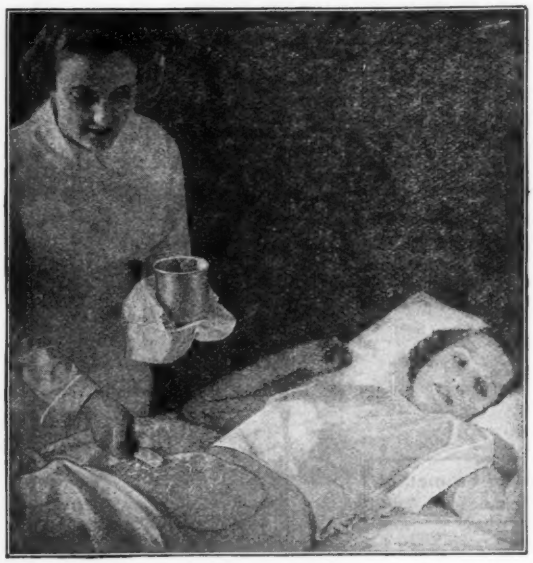

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CURRENT MEDICAL LITERATURE

MEDICINE

A Preliminary Note on the Pharmaceutical Action of Alkaloids of Rauwolfia Serpentina

Chopra and Chakraverty (*Indian J. M. Research,* 1941:29: 763) give in the following lines the summary of their observations:—

1. The toxicity of the three alkaloids, *viz.,* ajmaline, serpentine and serpentinine and their toxic symptoms have been studied on white mice by intraperitoneal injections—serpentine is the most toxic of the three alkaloids; ajmaline and serpentinine are about equally toxic. 2. Crude extracts of R. serpentina produced fall in blood pressure which seemed to be peripheral in origin. 3. Ajmaline raised the blood pressure in decrebrate animals but lowered the pressure in spinal preparations—the fall in pressure was more marked when the pressure was previously raised and maintained at a higher level by slow continuous intravenous injection of adrenaline. 4. Serpentine produced fall in arterial pressure both in decerebrate and in the spinal preparations. 5. The effects of serpentinine closely followed those of ajmaline on the blood pressure of experimental animals. 6. Neither ajmaline and serpentine had any narcotic or sleep-producing effect in mice; serpentinine possessed such effects; sedative effects were, however, found with the crude extracts.

Pneumoperitoneum Supplementing Phrenic Paralysis

Rilance and Warring (*Am. Rev. Tub.,* 1941:44:323) in reporting on their experience with pneumoperitoneum supplementing phrenic paralysis (to elevate the paralysed hemidiaphragm) observe that the indications are the same as phrenicectomy and that combined treatment closes the cavity and reverses the sputum more frequently when phrenicectomy alone has failed. The combined treatment was done in 55 consecutive cases with pulmonary tuberculosis and these cases were followed up for from 12 to 35 months. The result is as follows: In 18 cases the rise of the hemidiaphragm was insufficient (2 cm. or less) and the pneumoperitoneum was discontinued. Of the remaining 37 patients only 1 had negative sputum and stereorœntgenograms showed in 34 cases definite cavities. The average rise of hemidiaphragm after phrenicectomy was 2·8 cm. in 37 mechanically successful instances. The average additional elevation from pneumoperitoneum was 4·1 cm.; the average total rise was 6·9 cm. The cavities of 19 out of 34 cases with open cavities closed following treatment, in 2 they were questionably closed and in 10 they became smaller. Cavities of various sizes seemed to respond almost equally well. A higher incidence of cavity closure was found to occur when the cavity was in the lower third of the lung, the next best incidence was among apical cavities and then with those located in the middle third. 15 of 36 positive sputum became consistently negative and 3 intermittently negative and 18 consistently positive.

Early Diagnosis of Brain Tumor

Walker (*Illinois M.J.,* 1941:80:286) writes that the only cardinal symptom of a brain tumor is non-febrile, steadily increasing alteration of nervous function. But not all cerebral neoplasms progress in the same manner—some are ushered in by sudden and startling nervous phenomena. Commonly headache, vomiting, convulsions, failing vision, progressive paralysis and staggering gait are the initial mainfestations of a brain tumor. A careful neurological examination will usually reveal some evidence of the dysfunction of the nervous system. When the tumor becomes large enough to cause intracranial hypertension either from the blockage of the spinal fluid pathways or from its mass, papillœdema usually develops and localizing signs are more common. The spinal fluid rarely gives valuable evidence of tumor but examination of it is useful in eliminating other possible ætiological factors. Electroencephalographic studies are extremely valuable and may be made without inconvenience to the patient. Encephalography and ventriculography are valuable adjuncts but are only necessary when clinical and simpler technical diagnostic aids have been exhausted.

Chemotherapy in Bacillary Dysentery

Lapping (*Indian M. Gaz.,* 1941:77:69) writes that sulphapyridine appears to be specific against infections with bacillary dysentery. It relieves the pain within 12 to 18 hours, the stool becomes normal within 3 to 7 days (the average time required for the appearances of a normal stool was 4·7 days in this series)—the blood disappears first, the mucus persists longer.

Treatment of Meningitis

Hoyne (*J.A.M.A.,* 1941:117:1973) gives the following general recommendations for treatment of bacterial meningitis: 1. A lumbar puncture should be made for diagnosis—this may not be necessary in early cases of meningococcæmia. 2. No intraspinal therapy of any kind should be given; as much harm as good may result from intrathecal treatment. 3. Frequent lumbar punctures for the purpose of drainage should be avoided—the old theory that intracranial pressure is permanently relieved by multiple withdrawals of C. S. fluids is fallacious, the opposite effect is often produced. 4. When chemotherapy is resorted to maximum doses of the appropriate drug should be given at the beginning of the treatment, not at the end at which time it is less effective. 5. If an animal serum is given intravenously it should be well diluted in saline solution, not distilled water. If dextrose is chosen, the vehicle, should still be saline solution (10 per cent glucose in physiologic salt solution) and epinephrine hydrochloride should also be added before the intravenous flow is started. 6. Opiates should not be administered to meningitis patients—morphine may cause or increase existing œdema of the brain—comparatively few meningitis patients require sedatives.

The treatment of meningitis to-day need not be encountered with many difficulties which formerly attended it; successful therapy depends now more on good judgment than on expert skill.

Amoebic Dysentery and its Effective Treatment: Critical Study of 535 Cases

Manson-Bahr (*Brit. M. J.*, 1941:2:255) in reporting on the review of 535 cases infested with Ent. histolytica or its cysts (personal observations) points out the following facts: 259 cases had at some previous time emetine either alone or with other drugs. This treatment, according to the author, rather renders amœba emetine fast and makes final cure more difficult. There were 7 cases of emetine intoxication and 20 of relapses. 114 cases were treated with emetine bismuth iodide in doses totalling 20 to 40 grains—7 had relapses, some remained singularly resistant and 3 remained uncured after 9 separate courses of the drug. 5 patients were given auremetine (an aniline dye and emetine) and 5 of them had relapses and some showed much toxic reactions. 35 patients had quinoxyl (oxyquinoline sulphonic acid and iodine) by mouth and rectum—the drug was found effective in cases resistant to bismuth emetine iodide but not in freshly occurring infections; 8 had subsequent relapses. 7 out of 8 patients treated with acetarson had subsequent relapses and 5 showed symptoms of poisoning. Carbarsone proved no more effective than acetarson. No permanent cure was obtained by the use of several other drugs. The author advises combined treatment of quinoline retention enema by day and emetine bismuth iodide by night—this treatment is continuous and is maintained for 10 to 12 days—the relapse rate among 361 patients treated in this way was 3·7 per cent. The refractory patients were further treated by quinoline and emetine bismuth iodide. This is the result of follow-up study of ten years or longer.

SURGERY

Significance of Bleeding per Rectum

Phillips (*Am. J. Surg.*, 1941:52:481, *Ref. Am. J. Digest. Dis.*, 1941:8:9) writes that the commonest cause of bleeding per rectum is from hæmorrhoids. 22 per cent of all patients examined proctosigmoidoscopically have piles. Since hæmorrhoids are frequently seen in association with other lesions a proctosigmoidoscopic examination should be performed in all cases. Polyps of the rectum and colon also constitute an important cause of bleeding. It has been shown that polyps are often precursors of cancer and for that reason they should be properly treated. In children polyps most frequently cause bleeding. In congenital polyposis symptoms usually begin before or during puberty and bleeding is always the most serious sign. Bleeding per rectum is very frequently found with diarrhœa. Occult blood in the stool may originate in a lesion situated in the upper digestive tract. Digital examinaton, proctosigmoidoscopy and rœntgeńological studies of the colon will diagnose 98 per cent of the lesions of the rectum and colon. For the diagnosis of the cancer of the rectum digital and proctoscopic examinations are the simple and indispensable procedures.

Surgical Aspects of Septicaemia

Love (*Practitioner*, 1941:147:559) in dealing with the treatment of septicæmia writes that general measures to combat infection, prophylactic and remedial surgical procedures and chemotherapy are the three planks. *General measures* consist of skilful and vigilant nursing, the use of easily digestible and nourishing food, forcing of plenty of fluids and treatment of symptoms as they appear, *viz.*, continuous gastric lavage through a Ryle's tube in case of vomiting associated with peritonitis, arthritis of joints is best treated by immobilisation in plaster in the position best suited for ankylosis. *Surgical treatment.* Septicæmia following the infliction of wounds has been practically abolished by surgical prophylactic measures, provided that adequate surgical facilities are available within 6 hours. Compound fractures and laceration of soft tissues are treated as soon as the condition of the patient permits, by removal of the lacerated skin, damaged muscle and loose splinters of bone, this is followed by insufflation of sulphanilamide powder (5-15 gm) into the wound which then is lightly packed with gauge and the limb is encased in plaster. From 6 to 12 hours after injury debridement is advisable unless infection has supervened as indicated by adjacent cellulitis and constitutional disturbances. If the wound is obviously infected or if twelve hours have elapsed then drainage should be provided for and the limb immobilized as adequately as circumstances permit and serum treatment and chemotherapy should be started. Small puncture wounds, such as needle pricks or scalpel stabs incurred during post mortem examination or operation of a septic case demand an immediate local injection of flavin (1 c.c. of 1 in 500 solution). For abscess the dictum 'when there is no pus do not let it out' must be borne in mind and incision into inflamed tissues should be deprecated. *Chemotherapy* constitutes the most potent weapon in a battle against septicæmia. Prophylactic oral adminstration is valuable and can be augmented by local use of the powder. Therapeutic administration in case of proved septicæmia demand an immediate use of the drug and the intravenous route should then be employed, especially as vomiting may preclude oral administration.

Treatment of Shock

McMichæl (*Practitioner*, 1941:147:526) classifies shock as (a) neurogenic shock (primary) occurring soon after injury with or without blood loss, (2) oligæmic shock (secondary) produced by lowering of the volume of the circulating blood and differing very little from the picture produced by severe blood loss; (3) toxic shock caused by rupture of an infected internal viscus into a serous cavity and (4) shock caused by crush injury produced by plasma loss from muscle injury leading to progressive renal failure. *Treatment: General measures*—Warmth is the first essential, then fluid per mouth if not followed by vomiting or per rectum, morphine for relief of pain and oxygen. *Transfusion*—The blood pressure reading must be made repeatedly and on no account it should be allowed to remain under 90 m.m. of mercury for longer than one hour and lower figure permits of still less delay. A falling blood pressure, whatever the figure, usually necessitates transfusion. Blood, plasma or serum are the fluids of choice. Saline or glucose-saline is of little value as it leaves the circulation almost immediately. Gum-saline has many advocates and in the absence of blood or serum is certainly much better than saline. Transfusion should be given rapidly until the blood pressure has reached what may be regarded as a normal figure. No harm

has resulted from transfusion of quantities upto 1500 c.c. in 10 to 15 minutes; once the B.P. is 100-110 m.m. the rate of transfusion may be slowed down to a drip. Further B. P. readings are necessary as the pressure may fall again—the drip may then be speeded up to maintain the pressure at a satisfactory level. Although plasma and serum are convenient fluids it should be remembered that these will dilute the hæmoglobin and if the transfusion has to be massive (*i.e.,* more than one litre) blood is preferred. An effort should be made to see that the hæmoglobin does not fall below 60 per cent in the course of transfusion. *Drug treatment*—Vasoconstrictor drugs have little place in the treatment of shock. Treatment of renal condition in oligæmic shock and in shock caused by crush injury consists of forcing of fluids and giving of alkali (soda bicarb and soda citrate) to make the urine alkaline.

Twelve Year Review of X-Ray Therapy of Gas Gangrene

Kelly (*Radiology,* 1941:37:421) writes that many facts and some of importance have developed directly and indirectly from a twelve year study of the x-ray treatment of gas gangrene. *Directly*: 1. The x-ray provides a certain and definite means of preventing and treating gas gangrene. 2. The x-ray has made the use of serum unnecessary as a means of preventing and treating gas gangrene. 3. The cases analysed suggest that the use of serum may even be harmful to the diabetic who develops a gas infection. 4. The x-ray has been used successfully for the prevention of other varieties of infection after recent injuries as well as gas gangrene. 5. The x-ray has removed gas gangrene from the class of acute diseases having a high mortality and morbidity. 6. Finally the x-ray has completely eliminated the necessities of extensive surgery as a means of treating gas gangrene during its active invasive stage; any surgery indicated by the initial injury or disease should be performed but no surgery directed towards the treatment of gas gangrene is required with the occasional exception of a few incisions to relieve local tension caused by deep gas pockets or collected serum; amputation and extensive debridement are now obsolete procedures in the toxic stage of the disease and have been practically eliminated—they should never be necessary if x-ray treatment is started early and is properly given. *Indirectly:* This study has been a factor in the promotion of the general use of x-ray therapy for inflammatory diseases at the bedside with an apparatus of adequate kilovoltage. 2. Due to similarity of the organisms involved in gas gangrene and acute spreading peritonitis, the x-ray has been used in the latter disease with excellent results and further investigation of the procedure is indicated. 3. It has been proved quite conclusively that x-ray and sulphanilamide should not be used at the same time in acute inflammatory processes—when the two agents are combined the destruction of tissues continues. 4. The antitoxic effect of the x-ray in acute infection is amply demonstrated in treating gas gangrene, acute spreading peritonitis, surgical mumps and erysipelas—the antitoxic effect is apparently non-specific.

For treatment the authors give 150 r units per day in two doses of 75 r, or 3 doses of 50 r to the entire abdomen or the area believed to be affected. The kilovoltage varies from 90 to 130, depending on the thickness of the part. Filtration increases with kilovoltage.

OBSTETRICS AND GYNAECOLOGY

Puerperal Septicaemia

Corbet (*Practitioner,* 1941:147:565) deals with the treatment of puerperal septicæmia under two heads, *viz.,* prophylaxis and treatment of the established case. *Prophylaxis* consists of treatment of any upper respiratory tract infection in the expectant mother, exclusion from attending at childbirth of any one who has an upper respiratory tract infection and the use of mask at delivery even by the patient herself. *Treatment of the established cases.* Patients with puerperal septicæmia must be isolated and the nurses attending them must do no other work. The food must be light, nourshing and of high caloric value and meals will be "a little and often." The patient should obtain good sleep, tepid sponging may be of some help, morphine is to be given only when there is excessive pain. The patient may need a laxative but excessive purgation causing dehydration should be avoided. The use of ergot or its derivatives for improving drainage is a controversial point; the patient is perhaps better without having her inflamed uterus stirred up to activity. Drainage should be encouraged by posture but it is unnecessary and undesirable to keep the patient sitting erect all the time. She should be allowed to lie down if she finds it easier to sleep in that attitude. If the temperature persists towards the end of the second week of the puerperium a careful search must be made of any collection of pus in the pelvis. Transfusion may be necessary if there is much anæmia. Chemotherapy—sulphamilamide is the drug of choice in the treatment of hæmolytic streptococcal infection. Prophylactic use of the drug is restricted to those who have run particular risk of streptococcal infection at delivery or who are known to have been in contact with a source of streptococcal infection. The oral method of use is the one of choice. For parenteral use Soluseptasine is used. For mixed infection or infection with staphylococcus sulphapyridine is used instead of sulphanilamide. The drug must be given in adequate doses and toxic symptoms to be looked for and treated when they appear.

Treatment of Psychiatric States following Pregnancy

Kraines (*Illinois M. J.,* 1941:80:200) writes that the treatment of psychiatric states following pregnancy may be divided into three main categories. The first is the removal of toxic-infectious processes where they are discernible by such measures as bed rest, forcing of fluids dealing with the source of infection where possible or the use of one of the sulphanilamide derivatives as the case warrants; the delirious state is dealt with by adequate nursing care, the use of frequent alcohol rubs for reduction of fever and sufficient morphine during the initial stage to secure rest and sleep. The second form of treatment is that of convulsive shock therapy (Metrazol or electric shock therapy) may be used—this therapy is extremely effective if given shortly after the advent of the illness. The third important component in therapy is psychotherapy. In those patients wherein the menstrual period is associated with

emotional disturbance, testosterone propionate has been found useful. The prognosis of these puerperal psychiatric states varies with: (*a*) the presence or absence of toxic-infectious factors, (b) the amount of disturbance in the underlying personality before the pregnancy, (c) the promptness with which shock therapy is instituted and (d) the adequacy of subsequent psychotherapy.

Prothrombin Concentration and Mineral Oil

Javert and Macri (*Am. J. Obstet. & Gynec.*, 1941:42:409) observe that regular or intermittent use of mineral oil (liquid petrolatum) reduces and maintains the reduction of prothrombin concentration in pregnancy. Its intermittent use reduced the prothrombin levels in 3 out of 9 patients while daily intake for longer than one or two weeks resulted in a lowered prothrombin in 7 out of 10 patients. The authors maintain that the oil interferes with the absorption of vitamin K or it may inhibit bacterial synthesis in the intestine. The oil may even accumulate in liver cells. Thus the administration of vitamin K to pregnant women may prove of little or no value unless the simultaneous use of liquid petrolatum is curtailed.

Synthetic Vitamin E in the Treatment of Abortion

Lubin and Waltman (*Am. J. Obstet. & Gynec.*, 1941:41:960) report successfully on the treatment of abortion with a-tocopherol acetate, a synthetic preparation of vitamin E. Three groups of patients were treated. The first group of 7 cases with a history of two or more spontaneous abortions, the second group of 10 cases with a history of one previous spontaneous abortion and the third group of 15 with a history of threatened abortion. The results are as follows: Success in 71·5 per cent of group 1 patients (habitual abortion), in 80 per cent of group 2 (previous abortion) and in group 3 patients (threatened abortion) 80 per cent of the patients were delivered of normal infants. No abnormality of the foetus was observed. In the first and second groups the plan of treatment was—3 mgm. of a-tocopherol acetate was given daily, treatment being instituted at 5 to 12 weeks and continued up to periods between 14 and 36½ weeks. The initial dose in the third group varied between 3 mgm. and 48 mgm., given orally in divided doses during the first 24 hours after the onset of symptoms but the maintenance dose was 3 mgm. and treatment in this series continued for from 2 days to 101 days.

Stilboestrol Cream in the Treatment of Pruritus Vulvae

Lubowe (*Urol. & Cutan. Rev.*, 1941:45:354, *Ref. Practitioner*, 1941:147:605) reports successfully on the treatment of 12 patients with pruritus vulvæ by using stilbœstrol cream, morning and night using about 60 grains for each inunction. Before retiring an antiseptic douche is taken and 60 grains of stilbœstrol cream is introduced into the vagina. The ointment exerted a local soothing and emollient effect and a decrease of the pH to between 3·0 and 4·0 with marked epithelialization of the vaginal mucous membrane. Toxic symptoms in the form of headache, nausea, vomiting were not observed. In cases in which the history revealed gonorrhœa or trichomonas vaginalis special efforts were directed towards the elimination of the factor. The average length of treatment necessary for a cure was 2 to 3 weeks. The following cases in which excellent results were obtained are cited: (1) A patient of 65 years with a history of puritus vulvæ for 5 years with discharge, frequency and dysuria obtained immediate relief and complete healing after two weeks' treatment—this patient had failed to respond to treatment by cauterization of the cervix and daily antiseptic douches for six months. Secondary symptoms in the form of nervousness and occasional flushes also disappeared after stilbœstrol treatment. (2) Another paient with gonorrhœal cervicitis and vaginitis for which medicated tampons were inserted daily and potassium permanganate douches and sulphanilamide, 60 grains daily for 1 week and 40 grains daily for 2 weeks were prescribed, was given local treatment for the pruritus vulvæ in conjunction with stilbœstrol. After 2 weeks the itching disappeared and at the end of 4 weeks cure was pronounced following negative smears and cultures.

PEDIATRICS

Advances in Treatment in Diseases of Children

Sheldon (*Practitioner*, 1941:147:636) deals with the subject under the following heads:

Infant feeding. Breast milk is ideal and premature weaning from the breast should only be countenanced for reasons that are imperative. Even if the breast flow is insufficient for an infant's need a little breast milk is better than none, the deficit being made good by supplementary feeds. The common symptoms of underfeeding consist of failure to gain weight, constipation, fretfulness and crying which leads to the swallowing of excessive amounts of air and too often these symptoms lead the mother to resign from further efforts at breast feeding. This state of affairs must be checked. Babies fed on artificial food must have vitamin C supplied to their diet. Orange or tomato juices will supply the said vitamin.

New born. Vitamin K raises the plasma prothrombin and hence is useful in various hæmorrhagic conditions in the newborn, *viz.*, hæmatemesis, melæna, umbilical oozing. It has further been demonstrated that the plasma prothrombin in the newborn can be raised considerably by antenatal administration of vitamin K to the mother, even if this was delayed until four hours before delivery and this was superior to giving the vitamin direct to the infant.

Hypertrophic plyoric stenosis. The introduction of methyl nitrate of atropine (eumydrin) has increased the efficacy of medical treatment. Eumydrin is prescribed in a 1 in 10,000 watery solution (freshly prepared), 3 to 4 c.c. being given 20 minutes before each feed and it is generally necessary to continue eumydrin for a period of from 3 to 6 weeks. Eumydrin is but one aspect of medical treatment. The diet should be such as to leave a small curd in the stomach—the breast milk will achieve this most satisfactorily, otherwise citrated milk or lactic acid milk or evaporated milk diluted suitably may be used. Gastric lavage with normal saline should be perfomed twice daily until the washouts are clear and fairly free of mucus, then lavage is done once daily until vomiting ceases; it should then be gradually discontinued.

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has reduced the mortality rate to a great extent. To be effective the drug should be used in adequate doses; the following table is serviceable:

Age	dose reckoned in 0·5 gm tablet
0—3 months ..	½ tablet, 6 hourly
3—9 months ..	½ tablet, 4 hourly
9 months—2 years ..	1 tablet, 6 hourly
2—5 years	1 tablet, 4 hourly
5—10 years	1½ tablet, 4 hourly
Over 10 years ..	2 tablets, 4 hourly

The tablets should be given throughout the twenty-four hours and the initial dose should be double that shown in the table. Sulphathiazol is less toxic than sulphapyridine, causes less vomiting and is specially effective in staphylococcal infection. It is more rapidly absorbed and excreted and therefore, the drug should be given in enough quantity to maintain the required concentration in the blood. Sulphanilguanidine is absorbed so slowly that it can saturate the intestinal contents while the concentration in the blood remains low and the drug has been found effective by Marshall *et al* in bacillary dysentery. *Parasitic infections.* Scabies is effectively treated by a lotion consisting of equal parts of benzyl benzoates, methylated spirit and soft soap. The body is washed with soft soap, the lotion is applied with a shaving brush and allowed to dry and then a second application is made, the body is washed again after 24 hours. The treatment is repeated in 4 or 5 days if the itching of the skin relapses. Threadworms. Manson-Bahr has recently reported good results with phenothiazin, a thiazin dye, in doses of 1 gm. daily for seven days for children under 4 years and 2 gms for children from 4 to 8 (The drug is excreted into the urine and turns it red).

EVACUATION OF NON-ESSENTIALS AND INMATES OF HOSPITALS

K. S, RAY, M.A., B.SC., M.B., CH.B. (Edin.), F.S.M.F. (Bengal)
President, Indian Medical Association

The recent events in the Far East have now brought the war clouds almost to the doors of India. The two major provinces of India which are at present in imminent danger, *viz.*, Madras and Bengal, have thought it wise to advise people who are not connected with essential services to evacuate without causing panic to safer places. In other emergency provinces we are not aware of similar advice having been given by the authorities but a large section of the public have already on their own initiative evacuated from vulnerable centres to comparatively safer places. While we endorse this we at the same time like to state that it is not enough simply to advise to evacuate from the so called danger zone on a voluntary basis without a definite plan regarding the medical and other arrangements for their reception in selected areas. The Government should render proper facilities for the voluntary evacuation of school children, expectant mothers, young children, old and infirm persons and chronic invalids. Beggars, lepers and mental and tuberculosis cases and the like must also be evacuated. If the evacuation is followed on the lines suggested above, the advice given by the Madras Government and the Hon'ble Minister of Civil Defence on behalf of the Government of Bengal will go a great way to obviate any panicky rush in the event of air raids or in actual invasion should that happen.

We are not aware as to what is contemplated about the patients in the several hospitals in the city in the danger zones of the provinces concerned. In Calcutta as far as we are aware new admissions have been largely stopped in some of the hospitals, partly by Government to enable them to keep reserved certain proportion of beds free for actual air raid casualties. In other cases the rush of admission has diminished due to a good proportion of the citizens having already evacuated. But at the same time the number of patients who have been taking treatment in the hospitals are still very considerable. These patients are least able to help themselves in cases of air raid or in case of invasion as in Rangoon where compulsory evacuation was ordered. We have so far seen no public announcement as to what happened to hospital patients in Rangoon when the city was evacuated and scorched earth policy carried out before it was occupied by the enemy. It would be hard to believe that these patients were abandoned and left to the mercies of the invading forces. In any case we urge upon the authority for a statement to clarify the matter.

It would be thus realised that a heavy responsibility rests on those who are in charge of these hospitals and on the authorities. It is not enough to say that there is no compulsion and that the guardians of the patients are free to remove them at any moment. The normal service of hospitals must not be suspended and if it is inadvisable for these patients to be kept and treated in Calcutta something is obviously necessary and that urgently for providing for them in some safer places where they also can have hospital treatment. This has to a great extent been done in England. We would, therefore, urge on the authorities in Madras and the Hon'ble Minister in Charge of Civil Defence, Bengal, to take up this case of the hospital patients and prepare a scheme well in advance which can be followed whenever the emergency arises. The necessary action rests not with the individual hospitals but with the authorities. The obvious plan that suggests itself is to arrange for the removal of these patients to some hospitals in safer places outside Calcutta. This would mean increasing the accommodation and staff in such mofussil hospitals, and details for which require to be worked out without delay. It may not be very difficult to get rented houses in a place like Berhampur or Krishnagar, or it may be that some generous minded house-owner would make a temporary gift of his house for the cause; but what is urgently needed is that somebody must take the lead for action on behalf of the authorities.

The question about the patients in the T. B. Hospital presents some special difficulties. It will not be possible to remove these infectious cases to ordinary hospitals, and the only way would seem to be to provide for their temporary accommodation and treatment in some open place at a safe distance from the danger areas. The possibilities of such a plan require to be considered without any further delay.

DOCTORS IN THE NEW ORDER

M. V. NATESAN, L.M.P., *Madura.*

The subject of Doctors in the New Order is, I claim, a matter of very great importance and urgency and deserves a separate conference specially convened for the purpose. I hope in the near future a conference will be convened in India not merely of medical men but of all the scientific and humanitarian organisations on the lines of the Annual Conference of the British Association which was held in the last week of September, 1941. I would go even further and say that more than a Constituent Assembly of politicians, a Constituent Assembly of scientists is very much more urgent and capable of producing the desired results much more quickly and easily.

I shall content myself with touching upon some broad outlines of the problem, more with the object of provoking thought than as a complete description of any new order that I may have in view. Whatever I say, I am saying on my own responsibility based on my personal observation on my experience as a practising medical man of over a quarter of a century's standing, on the several conversations I have had with people both in the profession and out of it and as the result of a certain degree of introspection into my own reactions upon the situations which confronted me as a government servant, as an independent practitioner having to do with patients and the public and as a citizen and a patriot. The situations being the same for all of us I infer from that introspection that belonging to the same natural order, *homo sapiens*, as you or any other member of the species and not having any extraordinary kinks or crookednesses, vices or virtues or desires or ambitions which the other 999 members of the profession or society do not possess, the reactions of a large number of you all are likely to be the same. There may be a difference in degree, but there is not likely to be more than that. If there is, then you are a God or His Antithesis and unfit in either case to be in this world as a sentient being.

In considering a problem like a new order we must first of all reaffirm the fundamental principles upon which all orders of human affairs must be based; then examine the present condition to see whether those principles are being carried out in practice and, if not, why not and lastly we must think of some scheme whereby those principles may be more effectively carried out. And before any approach to any problem we must rid ourselves of all preconceived ideas, clear cobwebs, shear off shibboleths and with a fresh and unbiassed mind examine the whole question in as impartial and non-sentimental a manner as is humanly possible.

Fundamental Principles

The principles underlying the activities of all human beings are two in number. One fixed by Nature for *all living organisms* as a whole, inexorable, immutable, unavoidable; the instinct of self-preservation, the necessity to live and as a practical corollary to that, the necessity to acquire food, clothing and other appurtenances which relieve us from pain and promote our happiness, for pain shortens and happiness prolongs the span of that life. One may live simply or one may live in luxury—but one must live. If you want to change or avoid that desire to live, what do you do? You die. There is no half-way house between life and death; there is no such thing as an ultra-comatose condition with 'complete and continuous cessation of circulation and respiration' that can be distinguished from death. You cannot escape from that desire to live nor can you avoid engaging yourself in activities which preserve and prolong life and promote your own happiness.

There is one other compelling thing with regard to this instinct which I want to emphasize particularly for the edification of the public and the government and that is if there is a conflict between this instinct of self-preservation and the dictates even of our own reason, or moral sense, let alone the orders of any other person or state, it is this instinct and this instinct alone, that prevails. We may devoutly wish it were otherwise. Our reason and moral code and the laws of society may all be against it, but still it follows its own course, blindly, selfishly, others may think, but rationally as we are compelled to say, until it preserves itself or, opposed by superior odds, succumbs and dies.

The second principle that underlies our activities is that prompted by our moral sense, the characteristic quality of the human species, the desire to do good, the feeling that we have certain responsibilities to fulfil and duties to perform. These responsibilities are two in number; one what I may call 'direct' and the other 'remote'. The direct responsibilities are those relating to the life and happiness of our near and dear relations, parents, wife, children and such others who are dependent upon us for their living. To these we owe, after our own desire to live, a duty. Our filial love, our parental love, our sense of gratitude, all these go to make up our responsibility to maintain our parents and relatives in their infirmity, support the wife as per holy contract, let alone our love towards her and bring up our children for whom a special love has been inculcated in us by Nature in her plan to perpetuate the species.

The second subdivision, that which I have termed the remote responsibility embraces the whole community, society, nation, human beings, all living organisms, the universe around us and our Creator, in the descending order of attainability and the ascending order of transcendentalism. *'Prakriti'* pulling us down to objects of immediate and personal interest to us and *'Purusha'* soaring high in its efforts to merge with Brahman, we reach a state of unstable equilibrium at the communal, social, national or other levels to which it is possible for each of us to attain.

To recapitulate, there are three factors which guide the actions of all human beings: 1. Self-preservation denoted by the letter S. 2. Preservation of our kith and kin denoted by the letter K. 3. Realisation denoted by the lettter R.

In the vast majority of human beings the first instinct is very strong, the second is of medium strength and the third the weakest of all. If we could denote the strength of these three instincts by a certain number of positive signs opposite each we may say—

No. 1.	Self-preservation	+++
No. 2.	Preservation of kith and kin	++
No. 3.	Realisation	+
	Total of the three instincts	+++++

I have already stated that *Prakriti* and *Purusha* are constantly trying to get the ascendance over its opponent. As a result of this any kind of combination of the plus's can be imagined to be the springs of activity on the individual. One may be completely encased in the shell of his own well-being, aggrandizing for himself everything he can lay hands upon, destroying what he does not want for himself, not caring a jot for his kith or kin or for the society in which he has his life and being. As this mentality is not found anywhere except in the lowest form of parasitic life such as the amœbæ we can be justified in placing all the six plus's opposite No. 1 and leaving instincts 2 and 3 blank;

No. 1.	++++++
2.	nil
3.	nil

On the opposite extreme, though much rarer in number than those found in the preceding category—today among a world population of about 2500 million it is admitted there are only two or three such people in the world, working at an average of about one per 1000 million—history has recorded the appearance in this world of a certain number of prophets, *rishis and mahatmas* who had almost burnt out instincts No.'s one and two and in instinct No. 3 realised God or had far advanced along the path of such realisation. In these cases one may be justified in placing the plus's in this order:—

No. 1.	nil
2.	nil
3.	++++++

Within these two extremes you can place the positive signs in any manner you like opposite any of the three instincts and you may be sure you will find a man answering to that category.

The Limitations of the Reformer

The point I am trying to emphasise is that all of us—the exceptions on one of the extremes are too low and animal in nature to merit our notice and those on the other extreme are so rare, meteoric and irregular in appearance that for all practical purposes we may leave them out of calculation—are born into this world with certain attributes which we have to take into consideration as we find them. It is not possible for us to change them to any appreciable extent. All the advancements, of scientific knowledge, phenomenal though it has been, all the cultures and civilizations, many and widely distributed over the surface of the globe though they have been, all the religious teachings of prophets and *avatars* who have appeared from time to time even before the first verse of the *Rig Veda* was composed, none of these have been able to change the first or animal part of our instinct to a degree sufficient to at least ward off the present Armageddon. So that, the would-be reformer must take these into his calculation and realise the limits within which alone he could produce some effect. He must fully realise that these instincts are as much a force in Nature as gravity or any other physical force and must not oppose but must utilise that force to the best advantage. For instance, if the reformer desires that the individual must live down his selfish, aggrandizing propensities to satisfy his instinct of self-preservation, it must be shown clearly, without any shadow of doubt, by a suitable arrangement of society and economics that what is aimed at is to vastly improve, by collective action, the chances of preserving himself who, otherwise, would perish due to the inadequacy of his puny, individual efforts against superior odds. If, on the other hand, the individual finds that the whole social system is organised to benefit a small clique or oligarchy at his expense he revolts and reverts to his animal instinct.

Either you must open a number of booking offices and keep them open all the 24 hours or, keeping one window open from half an hour before the arrival of the train, regulate the crowd with an iron hand without showing any favouritism. In either case the individual will not have cause for grumbling. But if you keep the public window open for a short time only but allow a select few to purchase their tickets through the back-door at any time they wish, dissatisfaction is acute. Stampeding, jostling, pushing, elbowing and each-man-for-himself results. Law and order go by the board. It is not so much a 'survival of the fittest' as a 'survival of the lowest' instinct in man. The queue system in England was something wonderful right up to the first few air-raids. But when the public found that the shelters were very few and even these were occupied by undeserving people, they stampeded into under-ground railway platforms. Government had to accept that position and change its own law and interpretation of order to suit this unlawful and disorderly behaviour of the masses.

If you follow the natural frequency of an oscillating system with very little effort you can produce tremendous results. But if you do not tune in yourself to that frequency the increased current you apply will burst the valve and burn the coil, surely, but of broadcast music you will hear nothing.

Examination of Present Conditions

I shall now proceed to examine the present state of affairs to see whether those principles are followed, firstly with reference to ourselves, *viz.*, members of the profession and secondly with reference to humanity and government.

Present Position of Medical Men—Equipment

Egged on by our instinct and aided by our moral sense we looked about us for a line of activity for which there seemed to be a demand and which promised a reasonable chance of maintaining that life and chose Medicine as our profession. Though the choice of a means of livelihood was wide—as wide as from mendicancy to marauding—yet tradition, nature and political conditions limited the choice to a few professions such as medicine, law, teaching, commerce, industry etc. In spite of the fact that the cost, the length and the gruelling nature of the study of medicine were far greater than those required for any other profession, we chose that as ours.

On the purely material plane it trained us in the art for the exercise of which there was no likelihood ever of a slump, for flesh, unfortunately for it, is mortal and therefore heir to

disease, death and suffering. On the purely moral plane the study of medicine brought us in contact with all the arts and sciences and their practical applications, it gave the culture in the truest sense of the word, it gave us an insight, glimmering though it be, into the workings of the immortal Spirit upon Matter, a demonstrable evidence for the inspired assertions of the Prophets on the Oneness of all creation and if knowledge of God is the end of all knowledge—*Vedanta*—then we medical men have far outstripped the other members of society on the road leading to the Object of our Quest.

I am not making a vainglorious claim to boost ourselves. I am telling the result of that introspection into my own reactions to which I referred previously. If it has produced that result in me, a veritable tyro in the profession, what must be the degree of realisation attained by other stalwarts in the study and practice of medicine. These are days when intuition and imagination are given very little credence. Every statement, however true and strongly put by whomsoever it be, has to be proved by experiment and observation through the plane of the material senseorgans.

"Life is Immense" (Universal) *'Prano Virat'*

"Purusha eva idam sarvam, et bhutam, ed cha bhavyam, Uta Amritatvasya Isanah, ed annena atrohati"

I ask those who are following other professions and trades if their training or the daily practice of it gave them an inkling into the immensity of the implications of these two words 'Prano Virat'. Seeing for himself the similarity of life's process in the simplest unicellular organism as in the most complex one we call Man, he is able to extract the active principle from the apparent diversities of name, form and activity even as he extracts vitamin B from several substances.

That is the background of his training and that also is the stage on which he plays his part all through his life.

(*To be continued*).

A SCHEME FOR RE-ORGANISATION OF RURAL MEDICAL & PUBLIC HEALTH SERVICES*

CHAPTER I

Introduction—The insufficiency of the present organisations of the medical and public health departments of the Government of Bengal has become more apparent with the growth of knowledge, because these have failed to bring the advantages of medical knowledge adequately within reach of the people. Due to the persistent attempts of the Indian Medical Association and other medical and non-medical organisations to raise the standard of public health consciousness of the country, there is increasing conviction that the best means of maintaining health and curing diseases should be made available to all sections of the population.

The present unhealthy condition in the rural areas of Bengal is really appalling. Is it not curious that even to-day the Government have not started with comprehensive schemes for an all round betterment of the general economic and sanitary conditions of the rural population? For success in these lines there must be close cooperation between the departments of Agriculture, Industries, Irrigation, Education, Communications, Rural Reconstruction, Medical and Public Health and the Local Self Government. Co-operation should also be sought for, from the various local bodies and the people.

I. M. A. Opinion on The Government Scheme

The Rural Public Health Re-organisation Sub-Committee of the Bengal Provincial Branch of the Indian Medical Association have carefully considered the scheme for the reorganisation of Rural Public Health Services recently proposed by the Director of Public Health, Bengal, and is of the opinion that the Scheme comprises the public health well-being of the population in this province.

It is now accepted all over the civilized world that preventive and curative medicine can not be separated on any good principle and in any scheme of medical services they must be brought together in close co-ordination. This is more so in our country because of the special circumstances prevailing here.

The Sub-Committee is definitely of the opinion that the State cannot adequately supply the public health commodity to the population without the amalgamation of the medical and public health departments as they exist now. It is, therefore, of the opinion that the amalgamated department should be administered under the department of Public Health. Considering this view, the proposal made in the scheme of combining preventive and curative medicine and thus putting the dispensaries and hospitals under the control of the Public Health Department, is a step in the right direction. In fact this Association re-iterates the resolutions in this connection already passed at the Bengal Provincial Medical Conference held at Baruipur in November, 1939.

The Sub-Committee, however, considers it a duty to point out that the following are amongst others, the numerous practical difficulties in operating the Government scheme—(1) Primary Rural Unit: The smallest or primary rural public health unit in the Government scheme is a unit of two adjacent Union Boards with subsidiary medical relief centres in each Union Board. As the approximate population (average) of two Union Boards is 20,000 and as these comprise 20 to 40 villages with very little facility in the shape of roads, communications and transport from one village to the other, a primary unit with such an unwieldy and vast area will be of not much practical value. The Sub-Committee is of the opinion that, for all practical purposes, *it is essential to establish a primary rural unit in every Union Board.* In Union Boards with a population of over 10,000 or with an unusually large area with difficulties in communication and transport facilities, two rural units should be established.

(2) The Rural Medical Officer of Health is debarred from private practice except in serious and emergency cases and under certain conditions. He will probably have to work for 5 or 6 hours a day at his dispensary. Besides he is supposed to be responsible for various types of public health work. The Sub-Committee is of the opinion that it will simply be impossible for the doctor to attend to all the medical and

*Report of the Rural Public Health Reorganisation Sub-Committee, Bengal Provincial Branch, I.M.A.

public health assigned to him. If the Government scheme is worked, the doctor will either neglect the work of the treatment centre or the public health work. The salary of such a rural medical officer is a paltry sum of Rs. 50 with a conveyance allowance of Rs. 5 only. It is, therefore, obvious that the *Government are at present not in a position to offer a suitable salary to the doctor for his whole time service.* A young man educated for years in a medical institution cannot be expected to go to the village where he is not assured of a reasonable footing.

Under the circumstances, a subsidy scheme as drafted by the sub-committee, will serve the purpose of the Government. The subsidized rural medical officer with the requisite training will be able to treat cases and also to supervise the public health work if he is assisted by trained assistants. In course of time, when the economic condition of the province will be improved and sufficient funds will be available, the Bengal Provincial Branch of the I.M.A will be pleased to assist the Government in drafting a scheme for the appointment of whole time officers.

(3) Revenue Thana Centre: This centre will have to deal with a vast area with an approximate population of 80,000 to 90,000 (average). Such a centre *must be provided with a modernized Cottage Hospital with arrangement for treating maternity cases.* Some of the thana areas are so vast that two such centres will be required. Without the assistance of such hospitals, the primary rural units will be, so to say a few independent dispensaries with no facility for the treatment of patients with serious illness or the patients requiring surgical and obstetrical care. The Sub-Committee is of the opinion that the sub-divisional hospitals will practically be of little help to the rural patients as these hospitals will be too far away from the Union Board Centres.

(4) Maternity and Child Welfare Scheme: The Sub-Committee has carefully gone through the types of Government Schemes, for the purpose. The Sub-Committee is of the opinion that "for the success of such a scheme it is absolutely necessary that all the components of the scheme be complete, *i.e.,* Ante-natal, Intra-natal and Post-natal supervision as well as Toddlers Clinics". The Sub-Committee, therefore, feels that "the Government while realising the necessity for the Maternity and Child Welfare Centre in rural areas with a view to efficient ante-natal and post-natal supervision has laid practically very little stress on the need for intra-natal supervision, *i.e.,* supervision during labour. The Sub-Committee recommends that a small Maternity Ward of at least 2 beds be attached to every thana centre and this should be in charge of a qualified medical practitioner trained in Maternity and Child Welfare work. Each Thana Centre should have one qualified Midwife with training in nursing or a Health Visitor. Dais may be trained at this Centre and the trained dais may be attached to the primary rural centres. If sufficient funds are not available, the appointment of the Health Visitors may be kept in abeyance for the time being.

(5) The Sanitary Inspectors: Although the Sub-Committee is of the opinion that preventive and curative medicine should be brought within the sphere of the medical practitioner yet it does not agree with the method of re-organisation of the Sanitary Inspectors as advocated in the Government Scheme. The Thana Medical Officer of Health will be in charge of the Cottage Hospital. He will also supervise the public health activities of the area. But the services of a trained Sanitary Inspector attached to a Thana Centre will be indispensable. As the doctor will have to spend a few hours in the hospital, it will be simply impossible for him to perform the various out-door duties of a public health officer without the assitance of a trained Sanitary Inspector.

(6) Control & Supervision: The Sub-Committee has carefully gone into this question from the points of view of the Government, the District Boards and other local bodies. It is of the opinion that the services of the medical and public health staff in this scheme should not be provincialised at this stage. The provincialisation of these staff will not only mean a negation of the ideals of Local Self-Govermet but the scheme may also not be treated sympathetically by the local population.

For the present therefore, the District Boards should have administrative control over all the Units in the districts. The District Board, the Local Board and the Union Board will elect members of the Advisory Committee for the District, Sub-divisional, Thana and Rural Centres from amongst their members and also from the medical and non-medical residents of the corresponding areas.

The District Advisory Committee (or the District Medical & Public Health Board) shall have a non-official majority and shall be constituted as follows:—

1. Representatives from District Branch of the Indian Medical Association; failing that representatives from the local medical practitioners (elected by and from amongst themselves).
2. M. L. A.s and M. L. C.s of the district.
3. Representatives from the public men—elected by the District Board.
4. District Magistrate.
5. District Inspector of Schools and district officers of the government departments of Irrigation, Communications and Rural Reconstruction etc.
6. Chairman of the District Board—*ex-officio* Chairman.
7. District Health Officer—*ex-officio* Secretary of the Committee.

Similarly, the officials, non-officials and medical practitioners should be elected to form the sub-divisional, Thana and Rural Medical and Public Health Committees. So far as practicable, the authorities concerned should act according to the advice of the local Advisory Committee. All these centres should of course render facilities for inspection by the Executive Officers of the Government.

The Sub-Committee is further of the opinion that the medical and the public health departments of the Government be amalgamated at an early date and steps should immediately be taken to amalgamate the posts and establishments of the Director of Public Health and the Surgeon General with the Government of Bengal. The posts of the Civil Surgeons may be abolished and the District Medical Officers of Health may be placed in administrative charge of the District Hospitals and the Jails. A similar arrangement for the administration of the sub-divisional medical and public health work is also

possible. Local medical practitioners with proper training and on contract service may be placed under the District and the sub-divisional Medical Officers of Health to carry on the curative part of the work.

From the points of view of finance, control and efficiency at the present time, there is no further necessity of continuing the existing system of the State Medical Services. Following the lead of the independent democratic countries all types of Imperial and Provincial Medical Services should be abolished altogether and the work hitherto assigned to the members of the services may with efficiency be carried on by the medical officers appointed on contract service.

The Indian Medical Association has repeatedly pointed out that at the present day the civil side of the I.M.S. is absolutely unnecessary. The Government of Bengal will be well advised to request the Secretary of State through the Government of India to abolish the civil appointments of the I.M.S. at least in the province of Bengal. Regarding the provincial medical services, recruitment of fresh officers should be stopped altogether and the existing officers of the B.M.S. (Upper and Lower) be invited to take up contract services best suited to them according to their qualifications and experiences. Those B. M. S. men, who would not like to take appointments on contract basis, may be trained in public health work and be absorbed in the public health services. All officers on contract service or on subsidy should be trained at Government cost and there must be arrangement for *Refresher Courses* for the officers concerned. Provision should also be made for *Provident Fund System* for all the medical and public health officers, subsidized or on contract service.

(7) Finance: In this connection, the Sub-Committee is in agreement, to a great extent, with Dr. A. C. Ukil. He has pointed out in his Presidential Address at the Section of Medical and Veterinary Research of the 28th Indian Science Congress that "the first and foremost is the reduction in the scale of salaries in the superior services. A "Rolls Royce' Administration cannot be maintained in a 'bullock cart' country. In many departments of social welfare, the salaries of the superior staff swallow up 60—80% of the total departmental budget. This is a financially unsound policy and should be abolished. In Bengal, the non-voted expenditure on Medical and Public Health Department amounts to Rs. 8,73,833 of which Rs. 2,19,749 constitute expenditure in England, out of a total budget of Rs. 96,56,296 (1938-39). ..... Besides this there is much anomalous difference in the scale of salaries of the various services which are expected to do the same or a better type of job. For example, medical officers in charge of hospitals who do not possess post-graduate qualifications in public health or any other subject are given the same salary as District Health Officers with D.P.H. qualifications and are allowed to practise at the same time. ..... It will thus be seen that nothing but a thorough re-organisation of the services and a sound national financial planning will meet the needs of supplying the maximum requirements for a healthy living for the whole population."

It has already been pointed out by the Government that Bengal is far behind Bombay in per capita expenditure on public health, although from the point of view of public health it is in no way better than that province—as a matter of fact it is far worse. The Government have also pointed out that 'out of nearly 5 crores and 10 lakhs of population (1931) only 30 lakhs are in the urban area and for whom over Rs. 11 lakhs expenditure is being incurred out of a total of Rs. 31 lakhs, that means for the remaining 4 crores and 80 lakhs in the rural area, only Rs. 20 lakhs are spent." That is to say, *for about 93·5 per cent of the total population (living in rural areas) about 60 per cent of total expenditure on public health is incurred.* The Government had also admitted that "the present unhealthy conditions in the rural areas demand proportionately much more expenditure on public health so that the rural population may become healthy and be able to produce wealth for the country." The Sub-Committee after carefully surveying the financial condition of the people in rural areas and that of the Union Boards, has come to a definite opinion that it is impossible for the Union Boards to contribute the share of cost of the primary health units as suggested in the Government Scheme. The Union Boards and the Local Committees with great difficulty may raise an amount by donations etc. to meet the initial expenditure either in part or whole for the construction of the quarters for the medical and public health staff, but the whole of the recurring expenditure must be borne by the Government and the District Boards. When the economic condition of the Union Board areas is improved, and the benefit derived from the scheme is appreciated by the public the Union Boards will gradually share the recurring expenditure.

CHAPTER II

Indian Medical Association (Bengal) Scheme

The Rural Public Health Re-organisation Sub-Committee of the Indian Medical Association, Bengal Provincial Branch has formulated a scheme after a careful consideration of the following schemes and suggestions:—

1. Re-organisation of Rural Public Health Services Scheme of the Bengal Government (1940).
2. Government Schemes as operating in the provinces of Madras, U.P., Bombay, Behar and North West Frontier.
3. District Board Schemes including those of Murshidabad, Bankura, Birbhum, Malda and Midnapore.
4. Biswa-Bharati Health Co-operative Scheme.
5. Scheme of the Chairman, Reception Committee, Carmichael Medical College Re-Union (1940).
6. Suggestions from the different branches of the Indian Medical Association in Bengal including those from Khulna and Barisal.
7. Suggestions from many eminent medical men especially Dr. B. C. Roy,
8. Suggestions incorporated in the resolutions passed at a Conference of the Bengal District Board Chairmen held in 1940.

Primary Rural Unit—A Union Board comprising 10 to 20 villages (average) with an area of 11 square miles (average) and an approximate population of 10,000 (average) will constitute a primary rural medical and public health unit.

Staff: 1. One Rural Medical Officer of Health in charge of the Unit. Qualifications:—A registered medical practitioner trained for the purpose, at Government cost; subsidy:—Rs. 40/- to Rs. 60/- per month according to qualifications and experience; Conveyance allowance especially for public health duties—Rs. 10/- per month (fixed); subsidy for medicines and appliances—Rs. 300/- per annum; Duties—3 hours daily on week days at the treatment centre and at least two hours daily on week days for school hygiene work and supervision of other public health duties in the area; Private practice allowed usually in off hours; Free quarters; Total number—5000.

2. One Health Assistant. Qualifications—As given in the Government Scheme; Pay Rs. 20/- to Rs. 30/- per month; Conveyance allowance Rs. 2/- per month (fixed). Hours of work:—3 hours daily on week days at the treatment centre and at least 3 hours daily for public health duties; Free Quarters; Total number—5000.

3. One part-time trained and qualified Dai; Subsidy—Rs. 5/ per month; Duties 3 hours daily on week days at treatment centre; Private practice allowed usually in off hours; Total number—5000.

4. One part-time servant—Pay Rs. 4/- per month; Total number—5000.

As a rule the existing dispensaries maintained by the local bodies and public charities should be absorbed in the scheme with the necessary modifications. A treatment centre should not usually be opened in a village where a Registered Medical Practitioner has set up practice unless he is absorbed into the scheme.

The total annual recurring cost (average) of these 5000 primary centres will approximately be Rs. 1500×5000= Rs. 75,00,000.

Revenue Thana Centre—As already mentioned, such a centre must be provided with a Cottage Hospital with at least 10 general and 2 maternity beds. Some of the thana areas are so vast that two such centres may be required.

Staff: 1. One Thana Medical Officer of Health; Qualifications—Medical Graduates with training in teaching hospitals and also with training in public health and maternity and child welfare work; Subsidy Rs. 80/- per month; Conveyance allowance especially for public health duties—Rs. 20/- per month; Subsidy for medicines and appliances—Rs. 300/- per annum; Private practice allowed in off hours; Free quarters.

Duties: He will be in charge of the Cottage Hospital and all public health operations in the thana area. He will also have to supervise the work of primary rural centres from time to time. A few properly trained reserve officers will be maintained at the sub-divisional head quarters who will look after the work of the Cottage Hospital during the absence of the Thana Medical Officer; Total number—600.

2. A passed Sanitary Inspector; grade Rs. 40/- to Rs. 80/- per month; free quarters; Number—600.

3. A passed midwife; subsidy Rs. 20/-; private practice allowed; free quarters; Number 600 (or a Healthy Visitor).

4. A part-time male servant; pay Rs. 5/- per month; number 600.

5. A part-time female servant—Pay Rs. 5/- per month. Number 600.

The total annual recurring cost (average) of these 575 to 600 Revenue Thana Centres including reserve staff for the epidemic squad etc. will approximately be Rs. 17,00,000.

Sub-divisional Centre—It should be provided with a fairly equipped small hospital, epidemic squads and an office. The sub-divisional Medical Officer of Health should be in administrative charge of the hospital, the sub-divisional jail etc. The services of the Provincial Medical Officers may be dispensed with and local doctors with proper training may be appointed on contract service to carry on their work. The Medical Officer of Health should be an M.B., D.P.H. with training in a teaching hospital. Private practice should not be allowed. Besides his grade pay as given in the Government Scheme (Rs. 140/- to Rs. 380/- per month) and the travelling allowance (Rs. 400/- per annum) he should be given jail and non-practising allowances. A trained Bacteriologist (M.B. with training in pathology and Bacteriology) should be attached to every sub-divisional hospital.

Epidemic Squads may be formed by the Reserve Staff of the Thana Centres who may be stationed and trained at the sub-divisional centre.

District Centre—This Centre must have a fully equipped modern hospital with specialist services. As already mentioned, the District Medical Officer of Health will be in administrative charge of the hospital, the jail and public health work of the district. The services of the Imperial and Provincial Medical Officers may be dispensed with and medical officers with proper qualifications and training may be appointed as physicians, Surgeons and Specialists, on contract basis, to carry on the curative part of the hospital work. Besides the grade pay (Rs. 300/- to Rs. 500/- per month) and the travelling allowance (Rs. 1000/- per annum) as provided in the Govt. Scheme, he should also be given Jail and non-practising allowances. The Health Officer shall not be allowed to practise.

The total annual recurring cost (average) of the 26 District and 86 Sub-divisional Centres will approximately be Rs. 13,00,000/-.

Appointment, Transfer and Dismissal—All appointments and dismissals shall be made by the District Boards, subject to the approval of the Director of Public Health. While appointing Officers, all posts must be advertised in the papers, with the proviso that qualified local candidates and the officers who are already in service of the Government, the District Boards and other Local Bodies shall be given preference and that *non-Bengalees shall not be eligible* for any of these offices. The Advisory Committees concerned shall always be consulted before appointments are made by the District Boards.

On the report of gross neglect of duty, the Director of Public Health, after due enquiry, shall have the power to transfer the officers concerned within or outside the District. If the transfer is made on the grounds of better working of the health units, the concurrence of the local bodies concerned, shall be necessary.

Indian Pharmacopoeia—As a sufficient amount of medicines would be required in each Centre, an Indian Pharmacopoeia incorporating the scientifically tested indigenous drugs would be a definite asset in the scheme and is urgently called for.

Finance and Operation of the Scheme—The total annual recurring cost (average) of this scheme will be approximately Rs. 1,05,00,000. At present, the Govt., the District Boards and the Union Boards are already spending about 20, 13 and 12 lakhs of rupees respectively for rural public health work. Abolition of the Indian Medical Service will alone release about Rs. 6 lakhs from the Provincial Exchequer. Similarly, amalgamation of the posts and establishments of the Director of Public Health and the Surgeon General with the Govt. of Bengal, and abolition of the provincial medical services will render approximately Rs. 2 lakhs. Interest from Public Donations and Trusts, contributions from some of the Municipalities at the district and sub-divisional headquarters, re-adjustment of the expenditure for medical relief and income from the dispensaries and hospitals will at least come up to Rs. 12 lakhs. We can thus utilise at least Rs. 55 lakhs from the present resources of the Government, the Local Bodies and the Public Trusts. For the operation of this scheme, the Government will ultimately have to find an extra amount of Rs. 50 lakhs. But the training of the required personnel and the amalgamation of the medical and public health departments with the necessary re-adjustments will require a few years. The Government, therefore, will be well advised to prepare a five-year plan so that the personnel can be thoroughly trained and the burden of the extra expenditure can be borne with comparative ease. It may be pointed out in this connection that though the scheme is meant to improve the medical and public health standards of the rural areas inhabited by 4,80,00,000 or 93·5 per cent of the total population of Bengal, the initial expenditure, of the Government, for the introduction of such a scheme, will not exceed Rs. 10 lakhs.

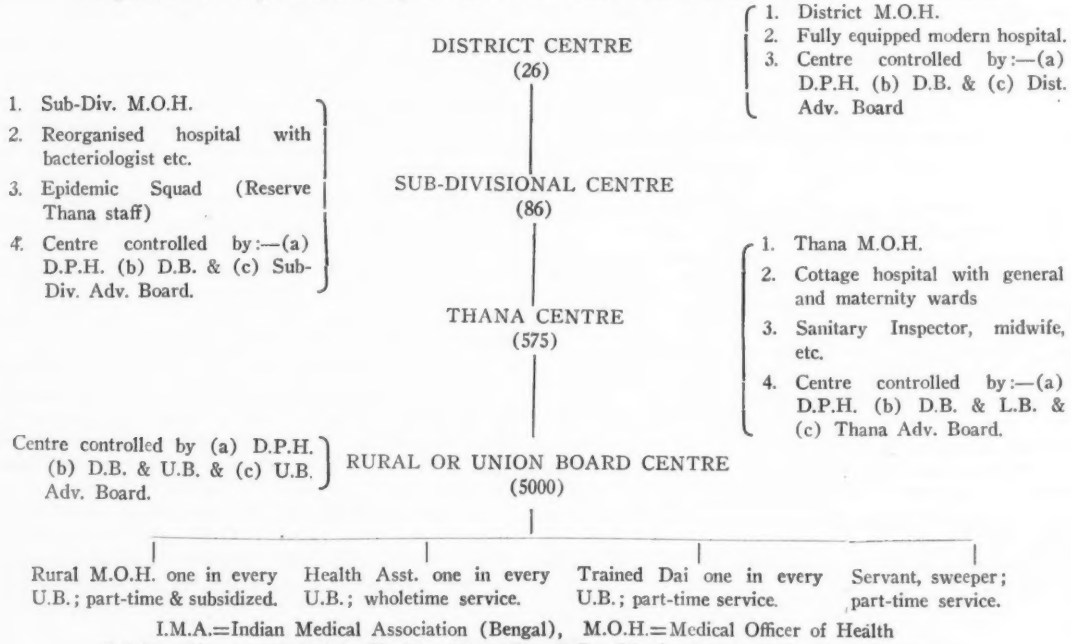
The Sub-Committee may be permitted to mention in this connection that in the Government scheme (1940), the nett new liability to Government has been shewn to be Rs. 11 lakhs for the first year (besides District Board Rs. 2 lakhs and Union Boards Rs. 16·65 lakhs). It is expected therefore, that considering the importance and urgency of the problem the Government will be able to incur an initial extra expenditure of Rs. 10 lakhs for the introduction of such a scheme. The scheme may be started as an experimental measure in selected areas for a year and, in the light of experience gained, may be modified accordingly before its application throughout the province.

In conclusion, the Sub-Committee requests the Government with all earnestness and sincerity to carefully study the advantages and implications of the proposed scheme and put it into operation from the next financial year with a five-year plan. The Sub-Committee also requests the medical and especially the non-medical public men and legislators to study the scheme and to impress upon the Government the immediate necessity of launching such a scheme. The Bengal Provincial Branch of the Indian Medical Association will be pleased to assist the Government in working out the details of the proposed scheme.

Members of the Rural Public Health Re-organisation Sub-Committee:—

Dr. K. S. Ray, Dr. A. C. Ukil, Dr. A. D.Mukharji, The Director of Public Health, Bengal (Lt. Col. A. C. Chatterjee & thereafter Dr. B. C. Mukherjee), Dr. M. U. Ahmad, Dr. K. K. Sen Gupta, Dr. Jibananda Mukherji (Howrah), Dr. Sambhu Nandi (Barrackpore), Dr. J. Chakravortty, Dr. Kali Pada Poi (Khulna), Dr. T. N. Ghosh, Dr. Hiren Chatterjee, Dr. Bidhu Bhusan Roy, Dr. Gourhari Datta (Ranaghat), Dr. B. B. Banerjea, Dr. Sudhindranath Banerji, Dr. Rabi Chatterjee and Dr. P. K. Guha (Convener).

Diagrammatic Representation of the I. M. A. Rural Medical and Public Health Scheme


DISTRICT CENTRE
(26)
1. District M.O.H.
2. Fully equipped modern hospital.
3. Centre controlled by:—(a) D.P.H. (b) D.B. & (c) Dist. Adv. Board
1. Sub-Div. M.O.H.
2. Reorganised hospital with bacteriologist etc.
3. Epidemic Squad (Reserve Thana staff)
4. Centre controlled by:—(a) D.P.H. (b) D.B. & (c) Sub-Div. Adv. Board.
SUB-DIVISIONAL CENTRE
(86)
1. Thana M.O.H.
2. Cottage hospital with general and maternity wards
3. Sanitary Inspector, midwife, etc.
4. Centre controlled by:—(a) D.P.H. (b) D.B. & L.B. & (c) Thana Adv. Board.
THANA CENTRE
(575)
Centre controlled by (a) D.P.H. (b) D.B. & U.B. & (c) U.B. Adv. Board.
RURAL OR UNION BOARD CENTRE
(5000)
Rural M.O.H. one in every U.B.; part-time & subsidized.
Health Asst. one in every U.B.; wholetime service.
Trained Dai one in every U.B.; part-time service.
Servant, sweeper; part-time service.

I.M.A.=Indian Medical Association (Bengal), M.O.H.=Medical Officer of Health
D.P.H.=Director of Public Health, (Bengal), D.B.=District Board, L.B.=Local Board.
U.B.=Union Board, Adv. Board=Advisory Board.

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Senior House Physician Chest Dept. Carmi-
chael Medical College Hospitals, Calcutta,
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NOTES AND NEWS

CIVIL DEFENCE OF BENGAL: MEDICAL ASPECTS

A skeleton scheme on medical aspects of civil defence for the Province of Bengal, as drafted by Dr. P. K. Guha in consultation with Dr. A. K. Sen has been approved by the Emergency Medical Service Standing Committee of the Bengal Branch of the Indian Medical Association at its meeting on the 13th March, 1942.

The scheme as adopted runs as follows:—

1. Planning regarding dispersal of population from congested and vulnerable areas.

As the question of air-raid attacks on Bengal is at the present moment a practical possibility, the Bengal Provincial Branch of the Indian Medical Association is of the opinion that to deal properly with the air-raid civil casualties, dispersal of certain types of population from the congested and vulnerable areas to comparatively safer zones should be arranged with a well-laid plan. The people should not be simply advised to evacuate from the so-called danger zones on a voluntary basis without a definite plan regarding the medical and other arrangements for their reception in selected areas. The Government of Bengal should render proper facilities for voluntary evacuation of the school children, expectant mothers, mothers with very young children, old and infirm persons and chronic invalids. Beggars, lepers, mental cases and the like must be evacuated, on a compulsory basis for preservation of morale and establishment of confidence amongst people staying back in the vulnerable areas.

For purpose of "planned evacuation", therefore, the province of Bengal should be divided into three groups of regions in the same lines as those issued by the Ministry of Health in England in a Schedule dated the 9th January, 1939:—1. A limited number of large crowded areas from which evacuation is to take place. 2. A number of "neutral" areas mainly situated in and around the towns which are not to be evacuated but are also not to be used for reception. 3. The areas considered most suitable for reception of the evacuees.

The next question that arises is that of providing the evacuees with food, protection, shelter, etc. The question of education of the evacuated children has also to be taken up by the Hon'ble Minister of Public Health who is now in charge of the 'Civil Defence' Department in collaboration with the Minister-in-Charge of Education.

Medical Provisions—The evacuation of women, children, and others to safe areas has already thrown a great strain on the public health staff and the sanitary resources of many rural and urban regions. Moreover, the medical resources of most of our rural areas have already been declared both by the Government and the Indian Medical Association to be grossly inadequate for peace time. The Bengal Branch of the Indian Medical Association has already placed before the Government a comprehensive scheme for re-organisation of rural medical and public health services. The Association is of the opinion that the present time is opportune for launching the scheme as an experimental measure especially in those rural areas which have become congested as a result of the dispersal of the population. The rural medical reorganisation scheme will, of course, need some modifications to suit the present emergency conditions. A rural health unit with a qualified doctor, a health assistant, a trained dai and a servant with necessary medical and public health equipments should immediately be established in every Union Board now congested as a result of evacuation from the danger zones of Bengal and Burma. Modernized cottage hospitals with general and maternity beds and with the necessary medical equipments and personnel should also be established with the least possible delay in all affected thana centres and poorer municipal areas for medical relief and public health work there. The question of expansion of laboratory facilities and suitable arrangements regarding possible epidemic outbreaks, accommodation of infectious cases, water supply and sewage disposal etc. are also important items in the medical provisions for the receptive areas.

Civil Defence—Modern technics of warfare leading to the possibility of unheralded bombing of civilian populations make imperative the preparation of facilities for providing medical service to casualties that may result from such incident. An organisation for these emergency facilities must be a fundamental part of our civilian defence programme. With the advent of the war in England, the country had been divided into regions which could function independently if cut off from other areas by the destruction of communications by air attacks and a similar division of medical arrangements was also carried out at the same time.

"The general aim was to provide in the danger areas for the collection, first-aid attention and sorting of casualties, and for enough treatment at the Casualty Clearing Hospitals to fit them for a journey by ambulance. Next to provide advanced base hospitals in presumably safer areas fully equiped in both apparatus and personnel to carry out all necessary operative or other treatment of the injured; base hospitals still further from danger to which patients could be moved for after-treatment; and finally a group of less well-equipped hospitals for convalescent and chronic cases. London formed one region, but on account of its dense population and liability to attack it required special consideration. The Metropolitan Police district and the area within about forty miles was therefore divided into 10 sectors, radiating out from the twelve big London teaching hospitals, which were to be the main casualty receiving hospitals for their sectors."

Administrative Control—The Bengal Provincial Branch of the Indian Medical Association has carefully gone into this question and is of the opinion that medical arrangements similar to those adopted in England should immediately be provided in the different regions of the province. The question of administrative control is also of great importance. The first-aid parties, police, civic guards, fire and demolition parties, and the question of transport etc. should be controlled by the Home Department. The Mobile First-Aid Units, First Aid Posts, Casualty-clearing hospitals, advanced base hospitals and base hospitals should be administered under the Minister of Health. The Government have already made some arrangements regarding the first-aid parties and the first-aid posts. The question of transforming the existing hospitals in and around the city of Calcutta into Casualty

Clearing Hospitals is also under consideration of the Government. The Association expects that the arrangements made should be adequate and effective without any further delay. Up till now, the Government have not apparently evolved any scheme of establishing well-equipped Advanced Base Hospitals for the operative and other treatment of civil air-raid casualties; Base Hospitals for the after-treatment and hospitals for treating convalescent and chronic cases. If 8,000 beds are considered necessary for the Casualty-Clearing Hospitals, at least 16,000 beds shall have to be arranged in the Base, Advanced Base and Convalescent Hospitals in accordance with the outlines of the scheme followed in Great Britain. On 7th September, 1939, the then Prime Minister said in the House of Commons that over 200,000 hospital beds were then ready for air-raid casualties in England and Wales and Plans for the new hospital units were under consideration. Out of these 200,000 beds, 56,500 were in the London region, 15,500 being inside the county and 41,000 outside. He also said that "nearly 2500 doctors had accepted enrolment in the emergency medical service and acceptances were being received daily."

Considering the urgency and importance of the problem, suitable steps, in transforming some of the outlying teaching hospitals (*e.g.*, in Burdwan, Jalpaiguri and Bankura) into Base Hospitals and some of the suitable sub-divisional and other hospitals (*e.g.*, Midnapur, Krishnagar, Chinsura etc.) into advanced base and convalescent hospitals, be immediately taken and necessary medical equipments and personnel be dispersed for working out the scheme.

Medical Education—As in England, pre-clinical teaching should be stopped in the danger zones and suitable arrangements be made for their teaching in safer areas. Regarding clinical teaching in hospitals, those needing elementary clinical instruction should be despatched to the base hospitals whereas the other students be divided amongst all the other hospitals. The amount of clinical material and the opportunities for practical experience will be enormously increased in the Advanced Base and Casualty-Clearing Hospitals and this should more than compensate for the dispersal of clinical teachers.

Role of the I.M.A.—In Great Britain, the British Medical Association acting on behalf of the Government established register of all men and women who would be available and appointed a Central Emergency Committee (later the Central Medical War Committee) to keep the register up-to-date. Requests for additional personnel were to be made to the Ministry through the hospital officer, and the Committee was to advise on the appointment of doctors so that they could be distributed to the best advantage. Local medical war committees were appointed to deal with problems arising in their own districts. The members of these were elected by the practititoners of each district at meetings convened by the B.M.A. but open to all, whether members of the Association or not." The above extract (*Lancet*, 31-8-1940, p. 279) clearly indicates the position of the B.M.A. in relation to the medical problems of the Civil Defence Scheme of the Government in the United Kingdom. The Bengal Provincial Branch of the Indian Medical Association draws the immediate attention of the Government and the public bodies to the above paragraph and requests the Government of Bengal to follow the example of the British Government in Great Britain in dealing with matters relating to their emergency medical services. The Bengal Branch of the I.M.A. will be too pleased to assist the Government of Bengal in working out the details of the medical aspects of their Civil Defence Scheme.—(A.P.)

AIR-RAID

The main sources of danger in an air attack are high explosive bombs, incendiary bombs and gas bombs or gas spray.

High Explosive Bombs—High explosive bombs may be expected to weigh from 250 to 3000 lbs. They can be designed to burst on contact with a hard surface or to penetrate a considerable distance before bursting. The latter type of bomb would penetrate an ordinary building before bursting, though contact with a steel or stone structure may serve to deflect the path of the bomb or to explode it prematurely, and reinforced concrete of exceptional thickness may cause the bomb to explode before penetration. Damage is mainly caused by the blast of the explosion and by the fragmentation of the shell of the bomb which results.

Incendiary Bombs—This type of bomb is usually small and light, weighing anything from 2 lbs to 50 or 60 lbs. It is filled with six incendiary compounds which are ignited when the bomb strikes a hard surface. The case of the bomb may be itself composed of inflammable materials, such as magnesium. Since these bombs contain within themselves the necessary elements for combustion they cannot be readily smothered. A small incendiary bomb will normally pierce the ordinary type of roof and will ignite on the floor of the top storey. Reinforced concrete, 5 inches thick, may be expected to keep out incendiary bombs 2 lb. weight. Incendiary bombs would be particularly dangerous against factories or stores containing inflammable or explosive material; and, being light, could be used in considerable numbers.

Gas Bombs or Gas Spray—The weight of a gas bomb varies, and it may be anything up to 250 lbs or even larger. The poison gas content would normally account for more than half the weight of the bomb.

Gases may be divided into two main types (*i*) non-persistent and (*ii*) persistent. Non-persistent gases when liberated are rapidly diluted by admixture with air, and the period for which they continue to be dangerous is dependent on the atmospheric condition, *e.g.*, chlorine, phosgene, and smokes from arsenical compounds. Persistent gases usually consist of a contaminating liquid which will continue to give off poisonous vapour for many hours or even weeks unless counter measures are taken *e.g.*, Mustard gas.

Gas attacks may be made by means of bombs or spray. If the former are used gas will be liberated where the bomb explodes, where as the gas discharged by spray will descend in the form of a fine shower of liquid, which may travel with the wind some distance before reaching the ground.

In providing measures against air attack, one of the objects is to prevent the gas, in liquid or vapour form, from penetrating into the building or shelter which it is desired to protect; and this is usually achieved by making the shelter air-tight.

Machine Gun Fire—The danger is not likely to arise frequently, but the measures taken to secure protection against high

explosive bombs would be equally effective against this form of attack.

Where air attack is expected: In a *target raid:*—(*a*) Military objectives. (b) Public utilities. (c) Food stores. (d) Ports. (e) Congested areas.

In a *terror raid*:—It is merely indiscriminate bombing. The idea being (a) to produce casualties by direct hit, gas or contamination of food, drink etc. (b) to arrest industrial and commercial activities. (c) to break the morale of the people.

Defence—Active: Active defence consists in anti-aircraft guns, balloon barrages, search light and fighter interceptor. Passive: Air raid precaution or A.R.P. is the passive side of the defence. Here we are not concerned with the wolves who do the fighting but are to consider the sheep. The purpose is to find out means by which they may be fenced round and huddled away, so as to have as few losses as possible and to be of no trouble to their own wolves.

The main objects of the precautions are:—(a) To avoid as much damage to life, limb and property as possible. (b) To release as many soldiers for carrying on aggressive warfare. (c) To minimise internal trouble and dissensions which would endanger the country's efficiency in carrying on the war.

A scheme may be drawn on the following line:—

(1) *General organisation*—(*a*) Instruction to individual, keymen and air raid warning sevices. (b) Protection of individual: (*i*) Shelter (underground or over ground) for individuals, adaptations and equipments. Dispersion. (*ii*) Respirators and other forms of individual protection (*iii*) Transference of inflammable and dangerous store, if any. (c) Protection of essential supplies—such as water, gas, electricity. (d) Evacuation of dangerous area, by children, old persons and hospital patients. (2) *Communication of air raid warnings.* (3) *Concealment of lights*—(*a*) Screening of windows at night. (b) Shading of lights. (c) Extinction of external lights. (d) Removal of external signs visible by day. (4) *Fire fighting*—(a) Public fire brigades. (b) Local brigades or local fire parties and their equipment. (c) Water supplies. (5) *Rescue work.* (6) *Repair of damage to buildings, demolition of unsafe buildings.* (7) *Augmentation of resources for repair of roads, sewers, etc.* (8) *Emergency communication.* (9) *Air raid Wardens.* (10) *Medical arrangement*—(a) Mobile first-aid parties. (b) First-aid posts. (c) Casualty clearing stations. (d) Base hospital. (e) Ambulance service. (f) Clerical organisation of records. (11) *Gas detection.* (12) *Decontamination of materials*—(a) Decontamination squads and their equipments. (b) Depot for squads. (c) Depot for vehicle decontamination. (d) Materials for decontamination.

The scheme has been drawn keeping in mind the saying "Prevention is better than cure." Nothing is more true in case of an air raid and this has been amply justified for the millions spent for civilian defence in Spain, England, France and Germany.

THE TREATMENT OF BURNS

The following are the recommendations of the co-ordinating Team on Burns, appointed by the War Wounds Committee of the Medical Research Council, England:—

1. *At the first-aid posts:* (A) Minor burns, which do not require admission to a hospital should, after cleansing with plenty of soap and water, be dressed as follows:—(*i*) On the face or hands, with gauze or lint impregnated with sterilized vaseline. (*ii*) In other parts of the body with tannic acid jelly or gentian violet jelly, 1 per cent. If jellies are used no dressing should be applied, and clothing not allowed to come in contact with the burn area until the coagulum has formed and is dry. The application of tannic acid or other coagulant jelly to a burn which has not been adequately cleansed is inadvisable. (B) Serious burns requiring admission to hospital should be treated by applying sterile vaseline on gauze or lint to cover the exposed portions. Provided the patient is shortly to be transferred to a near hospital, no attempt should be made to remove clothing in order to expose the entire burn area. Serious burns always require injections of morphine for pain, in full doses (1/3—½ gr. for adults).

2. *At the first hospital* where the case can be fully treated the following treatment is advised for extensive burns of whatever degree. Under gas and oxygen or pentothal anæsthesia, the burn areas should be throughly cleansed by the gentle but liberal use of soap and water, followed by saline and by removal of debris under strict aseptic precautions (soft soap should not be used; the best application is some form of soap flakes). No violent scrubbing or scraping should be used, nor antiseptic solutions or spirit. If the burn area is impregnated with oil or grease, ether soap is useful for cleansing. Extensive burns should never be fully exposed at one time, owing to the risk of increasing shock by loss of body heat; only a limited area should be exposed for treatment, which should be completed before the next area is dealt with.

Loss of heat is especially marked when ether soap is used. After the cleansing the burn surface and the skin around should be dried and the burn lightly dusted with sulphanilamide powder; a coagulant is then applied except in the areas mentioned *vide infra.*

3. *Coagulant applications:* The following solutions are the best, as they act quickly and require no special apparatus, etc.: (*i*) Silver nitrate, 10 per cent. (*ii*) Tannic acid, 10 per cent. (*iii*) Silver nitrate, 10 per cent, and tannic acid, 5 per cent used alternately. (*iv*) "Triple dye" (one formula is gentian violet, 1 in 400; brilliant green, 1 in 400 with neutral acriflavine, 1 in 1000. The solutions are mixed in equal proportions).

The application is best made with a large gauze mop; no dressings are required over the coagulated area, but it is advisable to cover the part with a sterile towel after the coagulum is dry. The edges of the area and any cracks that may develop on the surface should be dusted daily with sulphanilamide powder. In whatever way coagulation is effected the coagulum must cover the whole area and a good margin of unaffected skin around, and must be firm and dry or else the effect is lost, as the patient will still lose fluid from the burn area.

4. *Areas in which no coagulant of any kind should be used:* The face. The hands and wrists. The feet. Circumferential tanning of a limb should be avoided if possible, and if carried out the peripheral pulse must be carefully watched for the first 48 hours. Coagulants tend to contract on drying, and there is a risk of dangerous constriction of vessels or distortion of tissues; *e.g.*, the fingers and eyelids, as this occurs,

Treatment of Burns in areas which should not be tanned: After cleansing the burn in the manner described, the surface is dried and dusted with sulphanilamide powder. A tulle gras dressing is then applied, and this in turn is covered by 6-8 layers of gauze wrung out in warm normal saline. Tulle gras, originally a French preparation, may be prepared from curtain net, with a mesh of 2 mm., cut into pieces 9 cm. square. These are placed in a slightly larger tin box. The box is then filled with a mixture of soft paraffin, 96 gm., and balsam of peru, 2 gm., sufficient to impregnate and cover the material completely after sterilization by heat in an autoclave. The gauze must be kept moist by warm saline dripped on it from time to time, and must not be allowed to become dry. The tulle gras will enable the guaze dressings to be removed without causing pain or injury to the burn, provided they are kept moist; as a rule it is advisable for the first few days to change the gauze every 3 to 4 hours, the tulle gras being left undisturbed during this process. Twice a day at first, and subsequently, according to the process of the case, once a day, the tulle gras dressing is changed; where it is possible to immerse the affected part in a bath, the tulle gras dressing is allowed to float off, which it does readily. On the face or other parts for which a bath cannot be used a gentle stream of saline greatly assists in the removal, which should be painless and not associated with bleeding; where baths are used the limb can remain immersed for half an hour or more, the saline being kept warm throughout. Before applying a fresh dressing the unburned surface of the limb is dried, and the burn area dusted with sulphanilamide powder. Dressings must be carried out with full aseptic technique, special care must be taken to ensure the surgical cleanliness of the arm leg baths. An oil silk or jaconet bag or cover is of value in keeping the gauze moist on the arms and legs, both while the patient is in bed and during transport. Where burns of the face are treated by saline packs a jaconet bib assists in keeping the patient and the bed dry. All severe burns likely to be followed by loss of function or disfigurement, or to require extensive grafting, should be transferred to a burn centre as soon as they are fit to travel.

VENEREAL DISEASES AND THE WAR

The record of previous war has caused anxiety as to an increase of venereal diseases. At the Medical Society for the Study of Venereal Diseases Col. L. W. Harrison devoted his presidential address to a review of the present situation. He was able to state that since the outbreak of war the venereal diseases have not increased to anything like the extent feared. In 1939 the number of cases of early syphilis dealt with at the civilian treatment centres in England and Wales was 4,986, a decrease of 45 per cent since 1931 and less than a third of the number in 1920. The decline of this incidence of syphilis is also shown by a fall in the death rate due to the disease in infants from 2·03 per thousand in 1917 to 0·2 in 1939. The admission rate of patients for syphilis in the navy stationed at home has been from 8·1 per thousand in 1921 to 1·96 in 1936, the last year for which figures are available. In the army the syphilis rate has fallen from 9·8 per thousand in 1921 to 0·9 in 1937. The returns from civilian clinics show that since the outbreak of war upto the end of march 1940 this fall in the syphilis rate slowed down and during the last 12 months there has been a definite increase in both males and females. Civilian cases of gonorrhœa are fewer but when service cases are added there is an increase of 9 to 10 per cent in males.

In the discussion that followed, the speakers maintained that there is only a slight increase in venereal diseases except in parts frequented by foreign seamen. In the army stationed at home the incidence has been uniform from week to week. The total rate of venereal diseases has fallen from 11·3 per thousand in 1938 to 8·7 in 1940 and 8·4 in the four months of 1941. In the navy the return of syphilis is the lowest on record. There are now a large number of uniformed women in the auxiliary service of the navy and the army. The amount of venereal disease among them is negligible.—*J.A.M.A.*

RESTRICTED USE OF DRUGS

A Note from the Director-General of Indian Medical Service states that owing to the extreme difficulty in obtaining supplies of cocaine hydrochloridum it is imperative that stocks in hand should be conserved to the utmost possible extent. This drug is imported in the crude state from South America to the United Kingdom where it is refined and then despatched overseas. The purchase of cocaine involves therefore much foreign exchange and shipping space. Similarly for atropinae sulphas, stocks should be conserved and as far as possible its use should be restricted to ophthalmic practice and replaced by tinctura belladonnæ B.P., wherever practicable.

CORRESPONDENCE

The Editor is not responsible for any views expressed by contributors—EDITOR, *J.I.M.A.*

THE EDITOR,
Journal of the I. M. A., Calcutta.

HEMILATERAL PERSPIRATION

Sir,

I read the communication of Dr. K. C. Nambiar published in the January '42 issue of the Journal with great interest. In this connection I may mention two cases of hemilateral perspiration which came under my observation for which I have not been able to find an explanation. One peculiarity about these cases was that only the posture determined the side which was to perspire. If anyone of them lay in bed, say, on the right side the upper (left) half only would perspire and the lower (right) half would be dry, or *vice versa*. It surprised me to see that the lower half of the body in contact with the bed would be dry for hours although it was less exposed to the fan or natural breeze than the upper half. This phenomenon was not noticed when he lay on his back, and being interesting I had made repeated observations. Here no periodicity was noticed and only the position of lying down in bed was definitely the determining factor. Everyone is aware of the changing difference in the ventilation of the two nares. I can support the remarks of Dr. Nambiar noted under 1 from my own observations. Here too it is the posture which decides on the relative ventilation of the two nares and not any alternate or rhythmic functioning of the bilateral organs. I am etc.,

Canning Street, Lucknow.
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ASSOCIATION NOTES

LUCKNOW MEDICAL ASSOCIATION (LUCKNOW BRANCH, I.M.A.)—The annual general meeting was held after 1½ years on 7-1-41. This extension of the period of the present office-bearers was necessary in order to bring our Association in line with other branches in India, as the Indian Medical Association year starts from 1st October.

The following meetings were held: 5 general meetings, 2 Executive committee meetings, Scientific meetings practically every second Friday of the month. The attendance at these meetings has usually been very poor.

Journals—The Association subscribes Lancet, Practitioner and Indian Medical Gazette. We have also subscribed the Journal of American Medical Association.

Representation—I am glad to report that Government agreed to have one representative of the Lucknow Medical Association on the Board of management of King George's and associated hospitals. We hope our representative will continue to work on the democratic body for once it is replaced by autocracy as suggested by General Buckley, our representation ends with it.

Building—Correspondence has been going on with the Lucknow Improvement Trust for lease of a piece of land for the Association building.

Petrol Rationing—It is regretted that the members of the Lucknow Medical Association have not been fairly treated as regards petrol rationing. A letter to the effect was written to the Deputy Commissioner for allowing a deputation in this connection to wait on him but as yet no reply has been received.

Buckley Report—At a general meeting a resolution condemning the Buckley Report was passed and a Sub-Committee was appointed to go into details. The Sub-Committee met once and was unanimous that the hospital should not be transferred to Government. As soon as the report of the Sub-Committee on other points is ready it will be placed before the general house.

The following office-bearers were elected for the year 1941-42: President—Dr. B. N. Vyas; Vice-President—Dr. H. Hukku and Dr. Abdul Hamid; Treasurer—Dr. P. J. Kolapore; Secretary—Capt. H. N. Shivapuri; Joint Secretary—Dr. A. J. Faridi; Auditor—Dr. D. N. Seth; Members of the Executive Committee—Drs. Mrs. T. S. Iyer, K. S. Nigam, Hansraj, Gurmukh Singh, Panna Lal Sood and K. N. Basu. Representatives on the Central Council of the I. M. A.—Capt. H. N. Shivapuri and Dr. S. P. Gupta. Representatives on the Provincial Council—Capt. H. N. Shivapuri, Dr. Hansraj and Dr. S. C. Sen.

SHAHJAHANPUR BRANCH—Annual meeting held on 14-10-41, Dr. S. C. Sen, L.M.S. presiding:

There were 10 members in this branch in 1940-41. The activity of this branch was a little less than that of previous years, because the Hony. Secretary Capt. S. R. Seth, A.I.R.O. had to leave the station suddenly on military duty. Consequently, the number of meetings held during the year was less than before.

The following office-bearers were elected for 1941-42:

President—Rai Sahib Dr. S. C. Sen, L.M.S.; Vice-Presidents—Dr. T. S. Saxena, B.SC., M.B.B.S., Dr. J. N. Saxena, L.M.P.; Hony. Secretary—Dr. K. P. Mullick, L.M.F. (Acting); Asst. Hony. Secretary—Dr. K. P. Mullick (At present acting as Secretary); Representatives to the Central Council—Rai Sahib Dr. S. C. Sen, L.M.S. Representative to the Provincial Council—Dr. T. S. Saxena, B.SC., M.B., B.S.

GHAZIABAD BRANCH—Annual Report for the year ending 30th September, 1941, presented at the Annual General meeting held on 12-10-41:

Number of members on roll at the beginning of the year 12
Number of members on roll at the end of the year 8

The following office-bearers were elected for 1941-42:

President—Dr. N. N. Chakravarty, L.M.P.; Secretary—Dr. K. P. Gupta, M.B., B.S.; Joint Secretary & Treasurer—Dr. Balwant Rai Agarwal, L.S.M.F.; Representative to the Central Council—Dr. Manohar Lal Garg, L.C.P. & S.; Representative to the Provincial Council—Dr. H. L. Garg, L.S.M.F., L.P.H.

GORAKHPUR BRANCH—Annual General Meeting held on 26-10-41:

The following office-bearers were elected for 1940-41:

President—Rai Bahadur Dr. R. N. Sewal; Vice-Presidents—Dr. Mrs. Wood and Dr. K. N. Lahiri; Hony. Secretary—Dr. I. A. Khan; Hony. Jt. Secretary—Dr. J. W. Phillips; Hony. Treasurer—Dr. K. N. Srivastava; Auditor—Dr. P. C. Bose.

Working Committtee—The President, the Hony. Secretary and the Treasurer—*ex-officio*, Drs. B. K. Chatterjee, I. B. Chowdhury, Mrs. Singh and M. N. Chakravarti.

The branch started with 34 members in October 1940, and, at the close of the year, there were only 26 members on the register.

The following papers were read at clinical meetings held during the year:—(1) High Blood Pressure by Dr. K. N. Lahiri; (2) Sulphonamide group of drugs by Dr. Mathur; (3) Kala Azar by Dr. I. B. Choudhury and (4) Leprosy by Dr. Vidyarthi.

Office-bearers for the year 1941-42: President—Dr. K. N. Lahiri; Vice-President—Dr. B. K. Chatterjee, Dr. Mrs. B. A. Singh; Hony. Secretary—Dr. J. W. Phillips; Hony. Jt. Secretary—Dr. A. B. Lari; Hony. Treasurer—Dr. G. P. Mathur; Auditor—Dr. P. C. Bose. Representative to the Provincial Council—Dr. I. B. Chowdhury. Representative to the Central Council—Dr. K. N. Srivastava.

RAMNAD BRANCH—Eleventh Annual Conference held at Pallathur on 23-11-1941:

A large number of members of the profession in the district of Ramnad and a number of members of the sister associations of the Trichinopoly and Madura districts and the Pudukottah State attended the meeting.

The business meeting was held under the chairmanship of Dr. N. C. Appayya, the Vice-president of the branch.

The minutes of the last meeting were read and adopted.

The Eleventh Annual and audit reports of the association for the year ending 30th September, 1941, were read and adopted.

Moved from the chair, the following condolence resolutions were passed unanimously, all the members standing:—

This meeting places on record its deep sense of sorrow at the passing away of Dr. Raghavendra Rao.

This meeting places on record its deep sense of sorrow at the untimely death of Dr. K. V. Rajagopalan, an enthusiastic member of the association.

The Secretary was authorised to communicate copies of the above resolutions to the members of the respective bereaved families.

The following congratulatory resolution was passed unanimously:—

This meeting is proud to learn that Dr. A. Lakshmanasamy Mudaliar, one of the leaders of the medical profession in the Presidency of Madras, has been admitted as a Fellow of the American College of Surgeons and offers its hearty congratulations to him.

The Secretary was requested to communicate a copy of the resolution to the Rao Bahadur.

The extraordinary General body meeting was then held when the following resolutions bearing upon the constitution of the association were passed.

Resolved that the name of the Association be changed from its present one to "The Indian Medical Association, Ramnad Branch"

Resolved that in order to expedite and facilitate the work of the Association, the offices of the Secretary and the Treasurer be combined in one and the same individual.

Resolved that the managing committee shall consist of eight members made up as follows:—1. The President 2. The Vice-President. 3. The Secretary and Treasurer. 4. The Assistant Secretary. 5. One member elected from among the rural medical practitioner members of the association. 6. One member elected from the local fund and municipal medical officer members of the Association. 7. One member elected from the Government medical officer members of the Association. 8. One member elected from the independent medical practitioner members of the Association.

The President or in his absence the Vice-President shall preside over the meeting, the Secretary-Treasurer being the convener.

Resolved that the General body has power to amend the constitution only at any of its Extra-ordinary meetings called for the purpose and that the quorum at such meetings shall be not less than one-third of the total number of members on the rolls.

The ordinary General body meeting was then resumed. The follwing office-bearers for the year 1941-42 were duly elected.

President—Dr. M. P. Peter; Vice-President—Dr. T. S. Shetty; Secretary & Treasurer—Dr. T. V. Appasamy; Asst. Secretary—Dr. S. Janakiraman; Managing Committee (Additional members)—Drs. Abdul Sathar, S. Sundaresan, P. A. Nainar and N. C. Appayya. Auditors—Drs. E. Ivatts and V. Muthaih. Representatives to the Provincial Council—Drs. S. Subramaniam, T. V. Appasamy and T. S. Shetty. Representatives to the Central Council—Drs. N. C. Appayya and K. R. Rathnasamy.

The following members were elected as delegates to the forthcoming conference of the Indian Medical Association, to be held at Hyderabad during X-mas week, 1941:

Drs. T. V. Appasamy, T. S. Shetty, S. Subramaniam, A. Jabbar and S. Janakiraman.

The following resolutions were duly passed:

This meeting views with disapproval the recalling of retired men back to service in superior posts, as it blocks the prospects of senior men still in service in the already limited number of superior posts that are open to them. This could not be considered as an emergency measure due to the war, as it is the junior members who are called up for war service and as the senior members would have been automatically promoted to these higher posts, war or no war, if retired men were not recalled to duty.

This meeting fully endorses the statement issued by eminent medical men in India regarding the woeful inadequacy of the diets issued in jails to C class prisoners and hopes the Government will liberalise dietary as recommended by the statement.

This meeting regrets to learn that the Government of Madras have refused to grant the D.M.S. diploma retrospectively to all licensed medical practitioners who had already undergone the four years' course though the medical profession in the presidency has been protesting against it for the past one year and requests Government to reconsider their decision and give the D.M.S. diploma to all licensed medical practitioners following the former precedent, when Hospital Assistants who had undergone two and three years' course were allowed to call themselves L.M.P.'s at the time the latter diploma was instituted.

With a vote of thanks to the outgoing office-bearers, the business meeting came to a close.

The open conference then began with Rao Bahadur Dr. T. S. Tirumurthy as the President. In commencing the proceedings of the open conference, the President touched briefly upon the world situation and the imminence of a new world order in which doctors will be as profoundly affected as any other profession or section of society and exhorted members of the profession to close up their rank, forget their differences and become members of the united and impartial and all-India body of medical men, the Indian Medical Association.

Dr. R. Kalamegham, B.A., M.B.B.S., then gave an interesting theoretical and intensely practical lecture on the Practical Application of Plaster of Paris and other splints.

This was followed by a lecture by Sri V. Krishnamurthi, B.SC., M.SC., A.M.I.S.E., on Radium and Cancer, in which the learned lecturer briefly dealt with the history of the discovery of radium, the extraction of radium from pitch blende, the special containers and mode of their introduction.

Some Observations on Acute Abdomen was the next lecture and was given by Rao Bahadur Dr. S. Padmanabha Sarma, M.B. & C.M. The lecturer dealt with the chief symptoms and important diagnostic points and touched briefly on the lines of treatment.

The President, in a humorous speech which set the audience in roars of laughter, gave some anecdotes from his inexhaustible experience of medico-legal work of the doctor and showed

how to prepare a post-mortem certificate, how one must stick to truth and not permit himself to be swayed by anyone in the discharge of his duty and how, above all, he must be true to himself and to the cause of justice.

An enjoyable entertainment was provided to the members in a Manipuri dance by Kumari Lalitha with musical accompaniment by Sri Rao and party.

With a vote of thanks proposed by the Secretary to the President and learned lecturers, to Dr. N. C. Appayya for his lavish hospitality, to the danseuse, to the authorities of the A. C. High School and the other friends, the meeting came to a close at 8-30 P.M.

After dinner, the members left for their respective places.

KISHANGANJ BRANCH—Meeting of the Executive Committee held on 15-12-41 with Dr. Mohiuddin in the chair:

Considered letter No. C 72 from the Hony. General Secretary, I.M.A., for realisation of Central Fund Contribution. Resolved that this branch is of opinion that the direct realisation of Central Fund Contribution only from the members either by despatch of Journal or a demand card by V.P.P., will hamper the collections of the local branch. The branch is of opinion that the above method can be useful if the local branch contribution is also realised by the Head Office along with the Central Fund Contribution and the local branch collection remitted back to the respective local branches.

Considered letter No. C 73 from the Hony. General Secretary regarding the formation of Ethical Sub-committee. Resolved that an Ethical Sub-Committee be formed at the centre and at the branch.

Considered the letter of Dr. Mohiuddin regarding moving the Bihar Government for exempting those who possess the L.T.M. or D.T.M. diploma from the Post-Graduate Training.

Resolved that since, under the rules of the Government, one who holds the L.T.M. or D.T.M. diploma, is exempted from the First Post-Graduate Training, this branch requests the Purnea District Board that doctors employed under them and holding the M.B.B.S. degree, the D.T.M. & L.T.M. diplomas and also those who have undergone Post-Graduate Training, should be posted to dispensaries where there are facilities for microscopic work.

Considered letter No. 8 of Dr. Rajendra Prasad, Secretary, Muzaffarpore Branch, regarding paying T.A. to the representatives to the Central and Provincial Councils. Resolved that this branch is not in favour of giving T.A. to the representatives in different councils as it is impracticable and will throw a heavy burden on the branches.

RAICHUR BRANCH—Monthly meeting held on 16-1-42 in the Civil Hospital, Dr. L. D. Khatri presiding:

Owing to the absence of the permanent Secretary, Dr. L. Sreenivas Rao, the proceedings of the last meeting were read by Dr. B. G. Despande, the ex-Secretary, and confirmed.

A paper on Internal Reforms in the Medical Profession was read by Dr. N. Anantha Rao.

A case of spastic paraplegia of a month's duration and of an ascending type, involving the upper extremities, in a woman of 40 years, was demonstrated by Dr. Khatri.

A paper was read by Dr. Anantha Rao on Ulcer Penis. He described 8 types, namely, simple fissures, herpes, soft sores, hard chancre, mixed type, gummatous ulcers, epithelioma and phagedenic and mentioned their appearances in detail, the differential diagnosis and the methods of treatment used by him.

BERHAMPORE (GANJAM) BRANCH—Meeting of the branch held on 29-1-42 at Dr. B. V. Narsimham's Dispensary at 4-30 P.M., with Dr. P. Satyanarayana in the chair:

The minutes of the last meeting were confirmed.

The audited accounts for the year 1941 were passed.

Resolved to have the same office-bearers for 1941-42, namely, Dr. P. Satyanarayana as the President, Dr. M. V. Ramanayya as the Secretary, and Dr. G. Jagannadha Das as a member of the Executive Committee.

CHINGLEPUT DT. BRANCH—Meeting of the General Body held on 21-2-42 at the St. Joseph's High School Hall, Chingleput, Dr. M. K. Ramaswamy Iyer, District Medical Officer, presiding.

The following office-bearers were elected unanimously for the year 1941-42:

President—Dr. M. K. Ramaswami Iyer, L.M. & S. (Chingleput); Vice-President—Dr. P. S. Srinivasan, M.L.A. (Conjeeveram); Secretary and Treasurer—Dr. R. Varadarajan (Chingleput); Executive Committee—Dr. A. Govinda Kutti Nair (Chingleput), Dr. Miss Vedavelli Thayar (Chingleput), Dr. Sundaraj (Conjeeveram) and Dr. K. Vittuldoss Pai (Pallavaram). Representative to the Central Council—Dr. P. S. Srinivasan, M.L.A. (Conjeeveram).

The following three members were elected Representatives to the Provincial Council: Dr. K. Vittaldoss Pai (Pallavaram), Dr. A. Sundaraja Rao (Chingleput) and Dr. A. Rajamanickam (Conjeeveram).

Read letter C.80 dated 26th January, 1942, calling for the considered opinion of this branch regarding the following resolutions given notice of by the Kankurgachi Branch:

(*a*) that in the opinion of the Central Council, I.M.A. this is not an opportune moment for the formation and continuance of the Working Committee as constituted at present.

The consideration of the subject is postponed to the next meeting of the General Body in March, 1942.

(*b*) The Editor of the Journal with a proviso for the Business Manager and Secretary of the Journal to deputise for him whenever the Editor fails to attend the Working Committee Meeting.

i. The Treasurer of the Central Council I.M.A.

The Branch approves of the above resolutions.

(*c*) Read resolution giving notice to raise the Central Fund contribution from Rs. 3/- to Rs. 4/.

Read letter of the Hony. General Secretary, Indian Medical Association, Calcutta, enclosing copy of letter No. 8 dated 17-10-1941 from Dr. Rajendra Prasad, M.B.B.S., Hony. Secretary, Muzaffarpur Branch I.M.A. to the Hony. General Secretary, Indian Medical Association, Calcutta, regarding the question of paying Travelling allowance to the representatives of the Association to the Central and Provincial Council.

Resolved that the Hon. Secretary, South Indian Provincial Branch be requested to give us a lead and advise to decide this question.

Read letter of the Hony. General Secretary, I.M.A. Calcutta, dated 30-1-1942 regarding the desirability of recommending the formation of Provincial and local Ethical Sub-Committees and of laying down rules for co-ordinating their activities.

Resolved that the Hon. Secretary of the South Indian Provincial Branch be requested to give this Association a lead and advice.

Read letter of the Hony. General Secretary dated 29th January, 1942, communicating the resolution of the Working Committee of the liability for payment of the Central Fund Contribution. Contribution is one of the Branch and not of the individual members of the Association.

In view of this resolution this Branch resolves to request the members of the Association to remit their subscriptions in advance.

Read resolutions of the last All-India Medical Conference, Hyderabad (Deccan). Recorded.

In view of the Chingleput Dt. Medical Association having been converted into a branch of the Indian Medical Association the General Body is of opinion that there should be no further two kinds of members, one of the Indian Medical Association and another of the Dt. Medical Association, Chingleput, and, to have collective strength to attain the same status and power in this land as the British Medical Association in Britain, this meeting of the General Body requests all members to be a part of the Indian Medical Association and, in view of the Rs. 3/- to be remitted towards Central Fund contribution for each member, the annual subscription of this branch be reduced from Rs. 3/- to Rs. 2/- thereby the subscription for membership of this branch shall be Rs. 2-8-0 per half year payable in advance and Rule 9 of the Rules be amended so.

BEHAR SHARIF BRANCH—Meeting held on 17-2-42:

It was decided that Dr. Rital Prasad Varma, L.M.P., be elected as delegate for the next Provincial Conference.

The Rules of the I.M.A. Bihar Provincial Branch were discussed, and it was resolved 'that no change appears to be necessary at present.'

BIHAR PROVINCIAL BRANCH—Presidential Address by Rai Bahadur Dr. T. C. Guha, Retired Civil Surgeon, Motihari (Champaran) at the third Annual General Meeting of the Indian Medical Association, Bihar Provincial Branch, held at Patna on the 24th February, 1942:

Ladies and gentlemen,

I feel myself much gratified and thankful to Heaven in sparing me to address you once more from this chair. The honour is unique and is offered to me for the third time. I thank you very much for this your kind attention to me. But I can not praise you in your selection. The honour should have gone to some one else, younger and abler than myself, to guide you in your deliberations at this troubled stage of the world. I myself had protested when your choice was first made known to me. But when you still persist, I must bow to your decision.

A year has elapsed since we last met at this your annual assembly. We then expressed many high hopes and passed several resolutions. Now is the time to take an account, of how far our wishes have been realized and resolutions carried into effect. I confess it is not possible to achieve every thing in the course of a single year. There must be difficulties in putting them all into operation.

Dr. N. P. Tripathy, the Hon. General Secretary of your Association, has toured round the province to bring home aims and objects of the Association to its every member. New members have been enrolled and as many as 14 more branches have been formed in addition to 8 originally existing last year. This is much encouraging for an organisation of only three years' standing. But still. I believe, it has not progressed as much as it should have. This is certainly due to certain difficulties which the Hony. Secretary must have experienced during his tour to organise local branches. I hope you will be earnest to put your heads together and devise ways and means to overcome them.

I am sorry I shall not be able to speak to you more than what I shall tell you in the Conference meeting to-morrow. I shall only stress on you on two points which I have not detailed in my speech which I propose to deliver to-morrow at the 1st session of the Behar Provincial Medical Conference. The Provincial Medical Association has got no place where to meet at present. The members have to sit at various places for their Conference and meeting. This is what it should not be. There should be a place permanently set up for holding our meeting. A suitable hall, with a library room attached to it, should be constructed at a place close to the hospital or in the hospital compound, if possible. Dr. N. P. Tripathi who is so very enthusiastic about the prosperity of the Association may be empowered with the aid of a sub-committee to collect funds for the purpose.

The second point I want to impress on you is to see that the resolutions which we will be passing now may be successfully carried into effect. For this purpose a sub-committee consisting of three or four members should be formed to effectively carry out this propoganda. Unless we do this the passing of resolution will be of little value. I do not want to detain you longer but wish you to utilise the time in carrying out the other items of business detailed for this meeting.

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Annual Report for 1940-41 presented at the third Annual General Meeting held at Patna on the 24th February, 1942:

I have great pleasure in presenting before you the Annual Report of the Indian Medical Association, Bihar Provincial Branch, for the year 1940-41, but the time when we have assembled here to-day is the most distressing period in the history of World's civilization, when nation after nation, countries after countries are in the process of destruction. The massive war clouds are thundering over the whole of the World and the enemy is knocking at the very door of India, but before I proceed further let me, on behalf of the executive of the Provincial Medical Association accord a warm

welcome to you who have come down to this capital town of this Province. It is with sincere gratitude that I appreciate the warm enthusiasm which has urged you to attend this meeting and the conference.

The Provincial Branch of the Indian Medical Association was formed in 1939 and its first annual general meeting was held on the 27th February, 1940. To-day we are having the third general meeting and I am presenting before you the report of the Association from the 1st October, 1940 to 30th September, 1941.

Annual General Meeting—The last annual general meeting was held on Thursday, the 27th February, 1941 at 6-15 p.m. in the P. W. Medical College lecture theatre, Rai Bahadur Dr. T. C. Guha presiding. After the presidential address was delivered and the office-bearers elected, resolutions were moved and passed. Later, the resolutions passed at the All-India Medical Conference at Vizagapatam were considered with a view to find out ways and means of giving effect to them and also letters from the Hony. General Secretary were considered. The changes in the rules of the Association recommended by the Council were approved. Amongst the resolutions passed at the meeting one was to request the Government of Bihar to include the Association in the list of Associations recognised by the Government. This has since been done. The second resolution was to request the Indian Medical Council to grant recognition to the M.B., B.S., degree of the Patna University with effect from the date the degrees were first conferred. This has also been done since we met last.

Working Committee Meeting—The Working Committee met three times, on the 31st October, 1940, 5th February and and 14th September, 1941, to dispose of the routine business of the Association. At the meeting of the Working Committee held on 14th September, 1941, it was resolved to write to the President and the General Secretary of the Indian Medical Association to visit Patna and come in close touch with the members of the Association. Dr. K. S. Ray, President and Capt. P. B. Mukerji, General Secretary, very kindly accepted the invitation and visited Patna and we all had the privilege of listening to the President in a general meeting in which representatives from Madhubani (Darbhanga), Hazaribagh, Monghyr, Shahabad, Chapra and other district and local branches attended.

Council Meeting—The Council also met thrice, once before the annual general meeting and twice *i.e.*, on 27th February and 18th June, 1941, after the meeting. At its first meeting the Council relegated certain powers to the Working Committee to carry on the day to day administration and at the meeting held on the 18th June, the Council considered some of the important letters of the Hony. General Secretary which needed the considered opinion of the Council.

Formation of Branches—The activities of the Provincial Branch which had been rather poor in the previous year, have increased during the year under review as shown by the formation of a large number of branches of the Association in the Province. The 8 branches that existed in the Province at the beginning of the year have now gone up to 22. Attempts are being made to form more branches so that the Province may have a branch of the Association at all the District and Subdivisional Head quarters. The following branches do exist and the total strength of the members has been given against their names:—

(*a*) Patna Medical Association—99; (*b*) Khagaul Medical Association—8; (*c*) Dinapur Medical Association—18; (*d*) Barh Subdivisional Medical Association—7; (*e*) Bihar Subdivisional Medical Association—11; (*f*) Gaya Medical Association—47; (*g*) Shahabad District Medical Association—21; (*h*) Bhagalpur Medical Association—30; (*i*) Monghyr Medical Association—12; (*j*) Kishanganj Medical Association—11; (*k*) Deoghar Medical Association—9; (*l*) Madhubani (S. P.) Medical Association—5; (*m*) Ranchi Medical Association—19; (*n*) Palamau Medical Association, Daltonganj—13; (*o*) Hazaribagh Medical Association—23; (*p*) Muzaffarpur Medical Association—33; (*q*) Darbhanga Medical Association—20; (*r*) Madhubani (Darbhanga) Medical Association—11; (*s*) Banka Medical Association—5; (*t*) Chapra Medical Association—24; (*u*) Sewan Medical Association—17; (*v*) Motihari Medical Association—9; and (*w*) Direct members—17. Total—159.

Delegates to the All-India Medical Conference—Two delegates were sent to the All-India Medical Conference held at Vizagapatam, one, on behalf of the Patna Medical Association and the other on behalf of the Provincial Medical Association.

Invitations—You will be glad to know that the next session of the All-India Medical Conference is going to be held in Patna in the month of December and it is gratifying to note that Pataliputra, the historic city of ours, will have the fortune of witnessing the Silver Jubilee of the Indian Medical Association on the completion of its 20th year of existence.

Office-bearers—Rai Bahadur Dr. T. C. Guha has been elected President of the Association once again and it is a matter of great satisfaction to us that inspite of his age and ill health he has continued to take great interest in the affairs of the Association.

Other members of the Working Committee and my colleagues, the Joint Secretaries and the Treasurer, have all along given me great help in the routine duties.

The following were the office-bearers in 1940-1941:—President—Rai Bahadur Dr. T. C. Guha; Vice-Presidents—Dr. Saran and K. B. Dr. S. M. Afzal; Secretary—Dr. B. Narayan; Jt. Secretaries—Dr. N. P. Tripathi (Patna), Dr. S. Samadar (Patna), Dr. A. Ahamad (Shahabad), Dr. Akhauri Vindhachal Pd. Sinha (Saran) and Dr. Ram Ruck Ram (Hazaribagh); Hony. Treasurer—Dr. A. K. Guha. Members of the Working Committee—Capt. M. Husnain, Dr. S. N. Mazumdar, Dr. B. N. Prasad, Dr. K. Mitra and Dr. G. B. Shay.

During the year under review Dr. B. Narayan our past Hony. Gen. Secretary of the Bihar Provincial Branch had to resign his post on grounds of health and the burden of work

of a Secretary fell upon my shoulders and Dr. K. C. Sen was elected as Jt. Secretary in my place and I could not have carried on the responsibility of a Secretary but for his help and guidance which he offered ungrudgingly whenever required.

He has been the real guide and support in the various activities of the Provincial Medical Association and it is strongly hoped that he will very kindly accept the secretary-ship of the Provincial Medical Association which he had handed over to me because I do not consider myself fit for the post of a Secretary of the provincial organisation. And now that no grounds of health do stand the house should unanimously elect him as the General Secretary for the current year.

I think I shall be failing in my duty if I do not make mention of the sense of gratitude which I owe to Dr. T. N. Banerji, Dr. R. Saran, Capt. Husnain, Dr. G. B. Sahay, Dr. S. N. Mazumdar, Dr. K. Mitra, whose selfless devotion to the cause of Medical Association is simply exemplary. Finally, I beg to conclude with this humble request of mine that every medical practitioner in this Province should be so organically connected with the Association as to make a nearer approach to the Medical Associations of European and American countries where no measure for public health can be possibly adopted without the considered consent of their Medical Associations. I thank Dr. T. N. Banerji, the Principal of the Medical College for his permission to hold the meetings in the Lecture Theatre.

Conference—The Association decided to organise a conference along with its annual general meeting this year and to-morrow the conference will be inaugurated by Lt.-Col. Dr. Sachidanand Sinha and the day after the Scientific Section will be opened by Col. W. C. Spackman, I. G. C. H., Bihar. Attempts have been made to make the First Medical Conference of the Province a success and I am expecting guests from all over the Province to attend the Conference and take part in the scientific discussions.

I thank you very much for your patient hearing.

* * * *

The following is the text of the Presidential Address delivered by Rai Bahadur Dr. T. C. Guha, retired Civil Surgeon, Motihari (Champaran) at the First Session of the Bihar Provincial Medical Conference held at Patna on the 25th February, 1942:

Ladies and Gentlemen,

I am deeply grateful to you for the honour you have done me in electing me to preside over the 1st Bihar Provincial Medical Conference.

That honour signal as it is, carries with it a burden which is none too light and the strongest both physically and mentally amongst us may well hesitate to shoulder it. The members of the Council of the Bihar Provincial branch of the Indian Medical Association and the members of the Reception Committee of the Conference are well aware how I have hesitated. But the exceeding kindness with which you have repeated your confidence in me has left me no choice but to bow to your will and to endeavour to shoulder it as best as I can, the heavy burden of guiding the medical policy of the province of Bihar. That very kindness also emboldens me to expect from your every indulgence and co-operation in the high task with which you have entrusted me.

Two years ago I had the honour to preside over the annual general meeting of the Indian Medical Association, Bihar Provincial Branch and also over its annual general meeting last year and I do visualise the difference between the past meetings and this First session of the Bihar Provincial Medical Conference and I find in you an awakening which fills my heart with joy and pride and I cannot but thank Dr. N. P. Tripathi, the Hony. General Secretary of the Reception Committee with his co-workers who have struggled hard to make this Conference a success.

The era, through which we are now passing is very critical and the need for securing unity and solidarity of the profession is imperative.

No voice is heard unless it is strong and if you want to be heard, you must unite. You all know "Union is strength." A corporate body is a living organism and it keeps pace with time which is called progress. If you do not unite and put forward your views and ideas in a body, how can you expect to progress? The solidarity and uplift of a union chiefly depend on the amount of strength it gains and this strength is measured by the number of members joining the unit. My advice would be to you to swell in number and to make it a forceful organisation. It is a happy augury that the officers of the Indian Medical Service have now begun taking much care for this our Provincial Association and this is what it should be. It would go a great way towards the healthy growth of your Association.

But I would like to utter a word of caution here that if you want to keep this healthy growth of your Association intact, you must take care of that fell bacillus which if you once allow to come in touch with your organisation, consciously or unconsciously, it will ruin the entire system. I mean, the idea of superiority complex which is sometimes found inborn with some of our medical men. This idea, if not given up, would bring in a baneful effect on the growth of your Association.

We must respect the views and ideas of every member of our profession, superior or inferior. We should help one another in every possible way. If it is done in right earnest, perfect brotherhood will be fostered amongst the members and the foundation of this Association will rest on a sound basis. My advice, therefore, is that you should all work conjointly and try to improve the status of the profession. Medical profession is a sacred avocation of life and we must try to uphold the lofty idea of this branch.

Ladies and gentlemen, I would like to say a few words regarding the Medical Services. The pay and emoluments allowed to the members of the Provincial Service are very inadequate, specially in this Province. Higher salaries and enhanced privileges should be given to the members of the Provincial Medical Service.

My opinion is also that the Civil and Military side of the service should be completely separated. Interchange of Civil and Military men is, in my opinion, detrimental to the public interest and efficiency. High administrative appointments must go to the Indians according to seniority and merit and special pay and allowance should be given to those appointed for special work.

I would like to mention here that superior appointments should not entirely be the monopoly of those who are in the services, but should also go to the members of the independent medical profession according to their status and qualification. Due restrictions for private practice, should be put in to those who are in the services, to the advantage of those who are independent practitioners.

Ladies and gentlemen, I desire to advice you on some drawbacks prevailing amongst us and in the province as well and these we should try to remove as soon as we can. First, our only propensity should not be money-making. We must bear in mind that we are dedicated to a noble cause and it is to alleviate the pains of the suffering humanity. Secondly, our contribution towards the improvement of literary, scientific and medical ideas of our profession, has hitherto been very meagre. We can not hope to realise a high ideal, if we do not direct our energies in these directions. We can draw inspiration from our brethren living in the West and from what they have done and are doing and how. Thirdly, we have always felt the want of reliable chemical works or work shops for the production of scientific instruments and of chemical and industrial laboratories for the preparation of medicines in this province. It is now time when we should direct our endeavours to remove all these disadvantages.

Ladies and gentlemen, I desire to speak a few words regarding the Public Health of this province. I know, much effort is being made to teach the people about the sanitary needs and personal hygiene. But still there is much to do. The Public Health organisations in the province are no doubt in their infancy and to successfully cope with the various epidemic diseases, it requires men, money, co-operation of the people and an effective organisation. I know that response in all these directions is not forthcoming sufficiently.

But a good public health is a valuable asset for a country. India is a vast agricultural country. Her salvation lies with the development of the rural areas where the majority of her people reside. Our Government have now put into operation the Rural Development Scheme in our province. My suggestion to Government would be to empower the officers of the scheme to appoint a medical man in each Thana or in a big village with a well-equipped dispensary. These medical officers will not only look after the health of the people but also make a propaganda work among the mass to rouse their hygienic consciousness. Further, a fully equipped chemical laboratory with x'ray apparatus in every Sadar Hospital is an immediate necessity to help quick and scientific diagnosis of diseases, and also to open a touring eye-clinic in every district in rural areas to operate on cataract and other similar eye diseases in charge of an expert.

Obstetrical and gynæcological advantages are not aedquately given to the public. This is a most essential and urgent matter. Proper obstetrical and Gynæcological clinics should be centred in every Head-quarters of the district and subdivision under the supervision of specially qualified doctors and midwives and they should be allowed to go round the villages to attend to the midwifery and gynæcological cases.

Let me draw your attention to the horrors of the present world war. Now this war has come to our door by the entry of Japan into the enemy camp. The harrowing tales that are pouring in from Burma and other Eastern war zones by air bombing, fill the heart with terror and dismay. We, the members of the medical profession, have got a special mission when the world is surcharged with calamity. We have heard the clarion call of duty. We must come forward at once to mitigate the pains of human suffering. If we fail, we shall fail in our duties. Our Government has been giving us sufficient emoluments for the war service. We should come in a large number and join the service in any capacity which we are offered. Ours is a noble work. We should not fear any eventuality but exert our every nerve to help Government in the A. R. P. measures.

Ladies and gentlemen, I do not want to keep you waiting long. But before I conclude, I would once more lay stress upon your giving whole-hearted support to the Indian Medical Association,—not merely with sympathetic talk but by solid deeds and munificence. It may be that our Association has not been able to do much, but however little it has done, it has much encouraged the various members of the medical profession. I would also appeal to Government from this platform to allow us a seat in the provincial legislature to put forth our views and ideas as is given to other organisations of similar nature.

One word more. It is my earnest request to the British Government to give full recognition to the Indian Medical degrees which has long been due and also to grant the Licentiates the same privileges which they enjoy in the United Kingdom and United States of America.

I thank Lt. Col. Dr. Sachchidananda Sinha, Vice-Chancellor of the Patna University, for giving his inaugural address this evening and Dr. Ali Ahmad for welcoming the delegates as Chairman of the Reception Committee and also the various office-bearers of the various sub-committees for making this function a great success.

I thank you very much for your patient hearing.

* * * *

Resolutions passed by First Bihar Provincial Medical Conference, held at Patna, on 25th February, 1942:

1. This Conference mourns the loss of the following members of the medical profession and prays that their souls may rest in peace and also a copy of the resolution be sent to the members of the bereaved families.

1. Dr. Akhauri Anand Prakash Sinha. 2. Dr. Dinesh Lal. 3. Dr. Pasupati Nath Varma.

2. This Conference appeals to all medical graduates and licentiates in Bihar to support whole-heartedly the war efforts and join the military and A. R. P. medical services in order to give protection to their countrymen in times of emergencies.

3. This Conference resolves that in all matters affecting the medical and public health policies of the Province the Government should consult the Bihar Provincial Medical Association as is the practice in Great Britain and other countries.

4. This Conference resolves that the Government should give due representations in Legislature and other public bodies to the accredited representatives of the Medical Association of this Province, so as to safeguard the interest of the profession and give expert advice on matters of medical and public health interest to the above bodies.

5. This Conference resolves that in view of the prevailing danger to the health and life of the people of this Province due to unauthorised practice of the Western system of medicine by quacks, Government should take early steps to prevent quackery by enacting suitable laws.

6. In view of the progressed deterioration of the physique of the nation due to malnutrition and wrongly balanced diet, this Conference urges upon the Provincial Medical Association to appoint a committee of experts to investigate and suggest ways and means to combat the same and also request the Government to afford all possible facilities for this investigation.

7. This Conference deplores the complete unpreparedness of the Province to meet the impending dangers of the air-raid attacks that threaten the civil population at present and views with apprehension, the effect that rapid evacuation without properly planned sanitary and medical arrangements, would cause. The Conference would therefore call upon the local bodies to make in consultation with the members of the medical profession, such sanitary and medical arrangements, as will be necessary to meet the situation and primarily to prevent the occurrence and spread of epidemic diseases which are likely to break out as a result of rapid and uncontrolled influx of large number of evacuees in the rural areas.

This Conference also urges all medical organisations in the Province to co-operate with the local bodies in the matter and help them in providing the necessary sanitary and medical relief measures

8. In order to make India self-sufficient in matters of supply of pure drugs at a price commensurate with the purchasing capacity of the suffering millions, this Conference urges the Central and the Provincial Governments to formulate and give effect to a comprehensive and well planned scheme for the development of the indigenous drugs industries, both pharmaceutical and chemical.

This Conference further urges the Central Government to help the industry by providing, during the period of war, facilities for getting supplies of machineries and chemical raw materials not procurable in India, from other countries by the issue of priority certificates, and after the war, by giving adequate and proper protection against foreign combinations and competitions by means of tariff and other duties and by purchasing, for Government medical stores, drugs of standard qualities from the indigenous manufacturing firms only.

This Conference also draws the attention of the Government that though the present international crisis has given, to some extent, natural incentive to the growth, expansion and development of this industry, yet, in the opinion of the Conference, no stabilization and proper development of the industry is possible unless the Government concerned come to its aid by giving effect to all the unanimous recommendations of the Drugs Enquiry Committee, Government of India (1929-30) in favour of the normal and scientific development of the industry.

This Conference deplores the policy of the Central Government in not calling a meeting up-to-date of the Drugs Technical Advisory Board and thereby preventing it from functioning as envisaged in the Act, although the Act, under which it was constituted, was passed almost two years ago (April, 1940) in an unseemly haste, without giving the parties concerned sufficient time to suggest amendments and modifications.

9. In view of the drastic cut of 40% imposed on the pay of the medical officers of District Board Saran—at this critical time to meet the deficit of the District Board Budget this conference requests the Government to see that no cut be made from their pay as they are already underpaid and the cut already effected be restored.

10. Resolved that this Association recommends to the I. G. C. H. Bihar and then to the Government of Bihar to fix the rate of promotion from members of the Subordinate Medical Service to those of Provincial Medical Service to at least 10% of the sanctioned strength of the cadre (Subordinate Medical Service).

Resolved that 15 years of meritorious service will qualify a member of the Subordinate Medical Service for promotion.

Resolved that a certain percentage of promotion from the Subordinate Medical Service be effected every year or whenever vacancies occur.

Resolved that this Association notes with regret the fact that the Subordinate Medical Service is the only service in all the different subordinate services of Government, where promotion is unthinkable and is not given effect to inspite of very good and meritorious work of its members. If ever promotion has been made it has been few and far between.

Resolved that this Association strongly urges the Government to look into this matter and give a sympathetic consideration.

11. Resolved that the Indian Military Assistant Surgeons should have the same rank as the British Military Assistant Surgeons and 10% of the strength be promoted to I. M. S.

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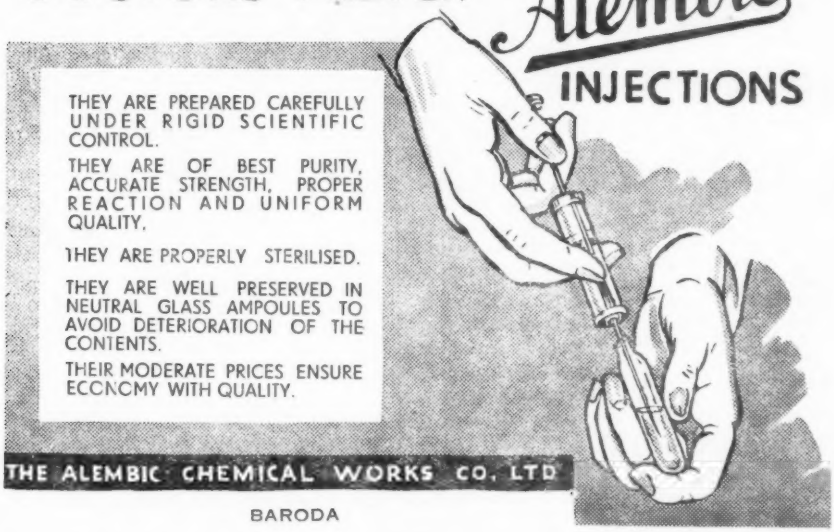
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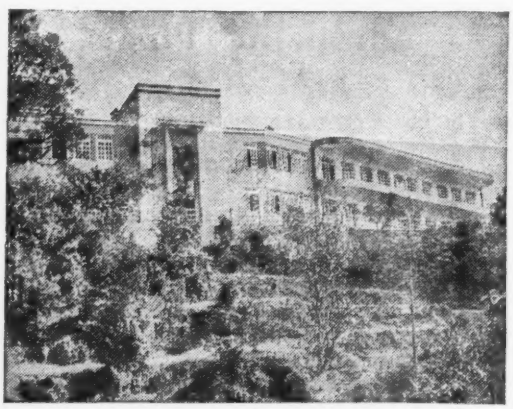

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